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SANITARY CARE AND HANDLING OF FOOD[1]

FRED W. TANNER

Department of Bacteriology, University of Illinois, Urbana

CARELESS handling of foods during harvest, preservation, storage, and preparation for the table may result in losses of flavor, color, and vitamins; but more important for the subject of this discussion, it may be responsible for development of untoward substances, such as those which cause food poisoning and infections. While much has been done to eliminate these hazards, they have not been conquered, and outbreaks of illness occur regularly to plague those who prepare food for the public. This situation is fully recognized by federal, state, and city health authorities who are giving much attention to sanitation of food service. Such practices as dishwashing, once made light of, have assumed great importance in the prevention of disease dissemination. Observations during the first World War showed that carelessly washed tableware was responsible for spread of diseases. Problems which are involved have been discussed before this Association by Tiedeman (1). Enough federal, state and municipal ordinances, codes, and laws probably exist to handle the situation adequately, but these are undoubtedly much easier to prepare than to enforce. Some of these ordinances would have been better if experienced dietitians had helped to prepare them. A city may pass an adequate ordinance on washing and sterilizing dishes yet not be able strictly to enforce it because of lack of inspectors to inspect every public eating place within the city limits often enough to see that the ordinance is enforced. That this is not done and probably cannot be done is obvious to anyone who has made a few observations.

A serious difficulty in controlling sanitary quality of foods is lack of adequate training by so-called food inspectors. Few are trained in sciences which are basic to sanitary work and few have had enough experience in the food field to know what is good practice. Sanitary engineers in some instances are trying to function as food inspectors, many of whom have had practically no training in biology, especially in food bacteriology, a science certainly basic in sanitary work. They have been trained largely in straight engineering in construction of water purification and sewage treatment plants, not in food chemistry or bacteriology. Such individuals are a nuisance in food inspection. They do not know what to do and therefore resort to silly recommendations in order to appear well informed. Those who prepare foods for the public and who in a great many cases are well trained and experienced, have a right to demand that "food inspectors" be competent, fully aware of what they are trying to do, of what the results of bacteriological examinations really mean, and also that they know something about preparation of foods.

To enforce ordinances and codes would require almost constant presence of an inspector in every place where foods are served. Only by such means could the practices mentioned below be prevented. Temperatures of the water in dishwashing machines have been lowered soon after an inspector concluded his inspection so that tableware could be handled more easily, and strength of chlorine solutions have been allowed to weaken. The existence of "sanitary codes" is probably necessary, but enforcement in every detail is most difficult because some of the requirements are too impractical and contribute in no way to sanitation.

[1]Read before the American Dietetic Association, Chicago, October 27, 1944.

Food and Drug Acts are necessary to ensure high quality foods for the dietitian and processor. Enforcement of these acts has decreased adulteration and misbranding in the United States and in England. Adulteration is of greater significance in the sanitation of foods because foods which are dirty as evidenced by the presence of various forms of filth are considered to be adulterated. *Escherichia coli*, the accepted indicator of fecal pollution of water, is now being used for controlling sea foods, including oysters, mussels and crabs, as well as milk, liquid eggs, egg powder, and in some cases, candies.

No one knows the actual extent of disease dissemination by foods, since such infections and intoxications are not reportable in many states. About the only official report on this subject is the annual compilation of the U. S. Public Health Service based on information supplied by various health authorities. In 1942 there were almost 300 outbreaks of food-borne disease involving 13,560 cases and slightly over 100 deaths. Those in the field know that this is not the whole story because many outbreaks and cases are never reported or are attributed to other causes. It appears that the number of epidemics of communicable diseases spread by foods has been reduced to a minimum with present practices and that further reduction must await some new method of attack if the experience with milk-borne outbreaks is typical. Serious outbreaks of food poisoning are continuing to plague those who serve large numbers of individuals.

CLEANLINESS IN FOODS

Clean foods, while most desirable, are not necessarily safe foods, but they are less likely to contain harmful bacteria. Dirt in foods is not objectionable in itself because it may be harmful, but because it indicates carelessness on the part of those who have handled the food. More and more attention is being given by the Food and Drug Administration to presence of dirt and filth in foods. The "sanitary conscience" of the public is also becoming more acute but there is still much to be done. This whole subject of clean food was well discussed by Porter (2) and others.

Dirt in milk has been considered to be a reliable index of conditions of production for many years. *Standard Methods for Examination of Dairy Products* has given instructions for the sediment test in most of the later editions, which is considered by many dairy technologists to be one of the most valuable laboratory tests. The reasons are apparent, it is much better to know something about general conditions of production over a longer period than to know that a milk supply did not contain objectionable bacteria at the time it was sampled, for it might become infected soon after. Such a method of examination as sediment testing tells what the possibilities are and serves about the same purpose as the *Escherichia coli* test in water and food analyses. The Food and Drug Administration is insisting that other foods such as butter, tomato products, and candies be clean. A dirty food is always potentially dangerous.

THE HUMAN ELEMENT IN FOOD SERVICE

The human element in food service is the bottleneck in sanitation of public eating establishments. Ordinances, codes, and laws are meaningless if they cannot be enforced

because of careless and indifferent workers. Employees must know what to do and the reasons why—therefore the need of educational campaigns among workers to explain what bacteria are and how they are disseminated. The Clark County, Nevada, Health Department has issued a 12-page booklet (3) for food handlers containing information on health protection. The significance of foods in spread of intestinal and respiratory diseases and the effects of careless and dirty methods in public eating and drinking establishments are stressed. Mendel (4) has described such a course of instruction through which the employee, the public, and the management would profit; attendance, he believed, should be compulsory and the stimulus come from the employer, not the health department. San José (5) also offers a course of instruction in which bacteria, communicable diseases, sterilization and dishwashing, food handling equipment maintenance, and health regulations are considered. A certificate is given the worker and a window card to the establishment when 80 per cent of its food handlers have certificates. Dodson (6) describes such a course of training in which over 800 were enrolled, and as a result of which Texas finally placed a sanitarian in each county trained to conduct classes. Much more can be attained by education than by using force—if the latter may ever be used. Need for such instruction has been recognized by the U. S. Public Health Service. Their booklet *From Hand to Mouth* is a good exposition of importance of simple sanitary practices.

The main purpose of the just-mentioned courses is to make food handlers aware of their importance in the effort to prevent spread of communicable diseases by food and to emphasize the constant need for personal hygiene. About all that is needed is a proper respect for common decency. The diseases which cause most concern are those of intestinal and respiratory tract origin. The venereal diseases are of little concern beyond indicating a very careless individual. The food handler who is a "carrier" of viable pathogenic bacteria and who is excreting them is a menace.

Various cities with well-organized health departments have been giving more attention to personal hygiene since periodic medical examination of food handlers has been abandoned. The most significant problem in sanitation is probably the human hand. It is easy to appreciate how it may become contaminated and how such contamination may be contributed to food. Buice *et al.* (7) tried to determine just what was the sanitary condition of the hands of food handlers in restaurants, cafés, lunch counters, sandwich shops, and soda fountains in Waco, Texas, after observing two waiters at a lunch counter in a hotel pass through the lobby of the hotel to the washroom and return to the lunch counter without washing their hands. *Escherichia coli* of intestinal origin was present on the hands of food handlers while at work in over 8 per cent of 337 tests. The U. S. Public Health Service is cooperating in education work among food handlers and has prepared publications to use in this effort (8).

Another problem relating to the human element is clean garments. While there might be some difference of opinion, it is doubtful whether those who prepare food in the kitchen need to be as slovenly in their appearance as are some cooks on railway dining cars. Most of us have been able to observe these individuals as they have passed through coaches on their way to lavatories. Any individual who is slipshod and slovenly in his dress cannot help but have an equally careless attitude toward cleanliness and decency when he is preparing food.

The "carrier" of disease-producing bacteria has been and is today one of the great menaces of the food-serving industry. Our literature is replete with epidemics which have been caused by these individuals. Much more is known about the typhoid carrier and perhaps the dysentery carrier; the staphylococcus carrier is assuming more importance as knowledge about staphylococcus food poisoning advances. The number of such individuals in the general population is probably not known and many have been revealed only after epidemics have been caused. At the close of 1939, the New York State Department of Public Health had recorded a total of 422 typhoid carriers, exclusive of those in state institutions, under supervision (9). The number has been greater in other years (10). Each carrier of disease-producing bacteria is a potential menace to the public and the peace of mind of the dietitian.

The type of food which may be involved in a food-borne outbreak of typhoid fever is quite varied. In addition to milk, carrier-caused outbreaks have been traced to chicken salad, boiled lobster, lettuce salad, and canned beef (11). Baked beans contaminated by a single chronic carrier have just been incriminated in 81 cases (12). Cheddar cheese (13) has been brought back into the light of active investigation because of several severe outbreaks of typhoid fever, further evidence of the fact that all dairy products should be made of pasteurized milk. These recent epidemics justify the efforts to search out and control typhoid carriers, despite a downward trend in typhoid fever incidence.

Carriers are usually revealed by an epidemic of typhoid fever. In some cases a typhoid fever history has prompted laboratory examination of excreta in which *Eberthella typhosa* has been found. The general trend of opinion among health experts is that routine laboratory examination of food handlers is unsatisfactory. While their arguments are based largely on cost of detection of a carrier, bacteriologists recognize many other difficulties. Negative results are never convincing and assume reasonable importance only after many examinations have been made over a long period of time.

MEDICAL EXAMINATION OF FOOD HANDLERS

Until about ten years ago, food handlers in our larger cities were given medical examinations which consisted of a record of their medical history, a physical examination, and laboratory examination of blood, stools, and urine as routine measures. This seemed to be good practice but careful appraisal of the results indicated that it was not accomplishing its intended purpose. Gilbert and Coleman (14) were among the first to point out the futility of examining specimens without consideration of clinical history or epidemiological evidence. They believed that a false sense of security may result from examination of a specimen or two submitted from a food handler since a carrier of *Eberthella typhosa* might not be discovered. Furthermore, it was considered much better practice to have a careful history taken and a series of specimens examined from all food handlers with suggestive histories. The old practice of examining specimens from all food handlers resulted, therefore, in fruitless expenditure of time and money. In view of changing opinion on this subject a committee of the Laboratory Section, American Public Health Association (15), reported that indiscriminate collection and examination of specimens from food handlers was undesirable and should be made only where called for by epidemiological or clinical results. The New York State Association of Public Health Laboratories (16) also opposed periodic laboratory examination of food handlers, claiming that routine examinations for typhoid carriers

had not and would not protect the public commensurate with the expense involved.

Many cities have abandoned periodic medical examination of food handlers. Hartford, Connecticut, and New York have done so, but have introduced stricter sanitary requirements. In the latter city, detection of one typhoid carrier has cost about $50,000. In Fort Worth (17) detection of each carrier cost the city $353.77 in 1938. New York amended its sanitary code in 1934, abolishing the annual medical examination for food handlers but prohibiting persons affected with communicable disease from working in a food-handling establishment and food dealers from employing such persons. Medical examination of employees of the milk industry, however, is still required (18). Best (19) gave the following reasons which prompted New York to discontinue compulsory examination and certification of food handlers in 1934: Examinations by private physicians were unreliable. Cost is not justified by the benefits achieved. Most careful physical examination will fail to reveal important conditions. There is no assurance that a food handler will remain free from diseases during the tenure of his certificate. He might become infected immediately after being given a certificate of freedom from disease. Amount of disease spread by food handlers is overestimated. More attention is given other efforts such as personal hygiene and general sanitation. The statement for Hartford, Connecticut, was made by Marden *et al.* (20).

Not all health workers are agreed that it is wise to abolish medical examinations of food handlers. Craster (21), for instance, believed that examinations were worth-while because they had educational value; however, at the time he had not carefully appraised the situation. Scott (22) searched for typhoid carriers among 7000 food handlers; 7 were found in the general food industry and 7 among a group applying for employment in dairies. When it is considered that milk is an excellent medium for the growth of *Eberthella typhosa* and other pathogenic bacteria, the danger of these 7 individuals to the public is recognized. A few carriers of *Eberthella typhosa* were found in practically all of the groups examined. West *et al.* (23) analyzed statistics on 91,257 laboratory examinations of specimens from milk handlers and concluded that the cost is not excessive if a sufficient volume of work is done. Sixteen carriers were located in 32 months; 5 of the 16 were detected without having been the cause of an epidemic. They considered this as a strong answer to the argument that laboratory examinations of food handlers are of little value in the absence of epidemiological investigations. In another publication these authors (24) state that routine laboratory tests were desirable on raw milk handlers and employees of pasteurization plants. During 1933, the average cost per examination was 32½ cents.

The *Ordinance and Code Regulating Eating and Drinking Establishments* recommended by the U. S. Public Health Service (Bull. 280) does not require routine medical examinations of food handlers because of the conflicting opinions of health officers on the value of such examinations. The problem of health of personnel is met by the following statement:

> No person who is affected with any disease in a communicable form or is a carrier of such disease shall work in any restaurant, and no restaurant shall employ any such person or any person suspected of being affected with any disease in a communicable form or of being a carrier of such disease. If the restaurant manager suspects that any employee has contracted any disease in a communicable form or has become a carrier of such disease he shall notify the health officer immediately. A placard containing this section shall be posted in all toilet rooms.

SANITATION OF PUBLIC EATING PLACES

Sanitation of public eating establishments means a fully organized and enforced program, beginning with insistence on high quality, clean raw foods, to preparation and service on the table by clean healthy workers. The physical plant, of course, is quite important but may lead to a false sense of security because other factors are more important (25). During recent years there has been a tendency to revert to older principles and to abandon some which were believed to be important. The newer efforts center around the human element in food service (26). An excellent guide for control of eating and drinking establishments (Bull. 280 mentioned above) contains 54 pages of detail as to how a public eating establishment shall be constructed and operated but less than two pages concerning personnel. Routine medical examinations of food handlers are not required. Fuchs (27) has discussed the problems involved in developing this code. The Public Health Service has recognized, however, the importance of the human element in food service and is trying to meet it. The pamphlet, *From Hand to Mouth*, also mentioned above, should be in the hands of every individual who is concerned in any way in handling food.

SANITARY DISHWASHING

This is an important part in the operation of a sanitary eating establishment. It is fully covered in the U. S. Public Health Service Ordinance and Code just mentioned. Over 35 years ago it was shown (28) that it is not a difficult matter to cleanse tableware and that careful washing and rinsing may be all that is needed. In 1916, Cole (29) recommended placing of all dishes, glassware, and silverware in boiling water for 5 min. Others (30) found that subjection of tableware to a temperature of 80°C. for 1 min. was sufficient to sanitize them. Early observations also revealed that hand-washed dishes carried more bacteria than machine-washed for obvious reasons. Here again the human element complicates good practice (31). The dishwashing machine when properly operated is a potent germ killer. Human beings cannot handle hot tableware with comfort. The hottest wash water which 30 tested subjects in one experiment could handle (32) was at 49 to 57°C. This is not germicidal, is below pasteurization temperatures, and acts for a short time only.

The greatest problem in this field is probably the dirty soda glass at cold drink stands and ice cream parlors. Some of these establishments are not provided with hot water and no attempt whatever is made to cleanse glasses (33). The drinking glass might be a more potent factor in disease dissemination because of the fact that it is touched by the lips. The fork and spoon are in the same category. The glass may be relatively difficult to clean. Fellers (34) reported that typical mouth micro-organisms persisted through the wash water and rinse water. Introduction of paper utensils where possible would be of great sanitary significance.

Concern over contaminated tableware is justified by results of laboratory tests in which *Streptococcus hemolyticus* was isolated from 6.35 per cent of articles examined (35). The strains were virulent and corresponded to the human type. The case has also been proved for *Mycobacterium tuberculosis* (36–38). *Streptococcus salivarius*, an organism used as an indicator of oral contamination of tableware, was recovered (39, 40) from the lips of 100 individuals and from glasses they had used. Many bacteria of the coliform, streptococci, diphtheroid, and intestinal groups were found on used tableware (41, 42). Among the various micro-organisms isolated were *Staphylococcus albus* and *Mycobacterium tuberculosis*. Such results defi-

nitely prove the need for concern over sanitary condition of tableware used in public eating places.

Despite the existence of codes and ordinances and adequate methods for sanitizing eating and drinking utensils in restaurants, a recent survey (43) by mobile laboratory units of the U. S. Public Health Service in different sections reveals that considerable improvement is needed, especially now that war activities have placed heavier burdens on restaurants.

The *Ordinance and Code Regulating Eating and Drinking Establishments* recommends immersion of dishes for 2 min. in clean *hot water* of at least 170°F., or for ½ min. in boiling water and/or immersion for at least 2 min. in lukewarm chlorine bath containing at least 50 p.p.m. available chlorine if hypochlorites are used, or a concentration of equal bactericidal strength if chloramines are used. These have been found to be bactericidal if rigidly adhered to.

HYGIENIC VALUE OF COOKING

This is a subject on which dietitians should be well informed. Carelessness cannot be allowed on the assumption that cooking will take care of sanitary defects in preparation. While it is known that heat will destroy micro-organisms, this maxim is based largely on results of experiments conducted in the laboratory in which the micro-organisms were exposed directly under known and well-controlled conditions. These rarely obtain in foods in which wide variations in rate of heat penetration exist. Liquid foods allow quite rapid penetration of heat by convection currents, while heat penetrates solid masses of food more slowly by conduction. An outbreak of typhoid fever traced to a dish of Spanish spaghetti prepared by a typhoid carrier illustrates this (44). The same investigator subsequently prepared spaghetti in the original pan, inoculated it with *Eberthella typhosa*, and cooked it in an oven for 15 min., at the end of which the temperature at the center of the dish had been raised from 16 to 17°C. (60.8 to 62.6°F.). It rose to 21°C. (69.8°F.) after standing at room temperature for an hour, yet *Eberthella typhosa* was not destroyed. When again heated in a hot air sterilizer at 160 to 170°C. (320 to 338°F.) for 30 min. the temperature at the center had reached 23°C. (73.4°F.) and at the top 54°C. (129.2°F.). Further heating in an oven regulated to 207 to 214°C. (404.6 to 417.2°F.) caused a rise in temperature to 83°C. (181.4°F.) at the top and 28°C. (82.4°F.) at the center of the dish. In view of these temperatures, it is easy to see how *Eberthella typhosa* survived to infect 93 individuals, how necessary it is to have clean healthy individuals prepare food, and that cooking is not always the safety factor which many believe it to be.

Investigations on effect of temperature and time of cooking on tenderness of roasts of meat have been interpreted to indicate that low oven temperatures of 125°C. and 225°C. are better (45). Such low temperatures might not, however, be sufficient to destroy bacteria and there might be areas where the temperatures were even lower. They would not destroy anaerobic bacteria, spores of which are very resistant to heat.

The situation is not much different for eggs. Temperatures attained in eggs by ordinary methods of cooking are too low for destruction of bacteria in eggs infected with *Salmonella pullarum* (46). Common methods of boiling and frying did not sterilize the eggs, nor did soft boiling, coddling and frying on one side destroy viable bacteria in the yolk. In experiments (47) to determine temperatures attained in eggs by boiling and frying, that at the center of an egg boiled for 5 min. did not exceed 47°C.; after removal from the water, it might rise to 70°C. After 8 to 10 min. of boiling, the center of the yolk ultimately reached 80°C. Fried eggs cooked to the usual degree were not rid of pathogenic bacteria.

Another illustration of the ineffectiveness of cooking as a means of sterilizing food comes from experiments on the cooking of fish (48) by means of boiling and frying: cod, haddock, and certain small fish at the rate of 6 min. per pound; halibut and salmon, 15 min. per pound. When boiled, the fish contained several thousand bacteria, in one case, 6000 per gram. Frying for from 15 to 30 min. did not sterilize and from 3000 to 8900 bacteria per gram were isolated.

Such results show that cooking cannot be relied on to compensate for carelessness in handling and preparation. The foods must be kept clean at every stage. When the steam-table is used, foods must be kept hot enough at all times to prevent bacterial growth, else they will be held at incubation temperatures.

FOOD POISONING OUTBREAKS

These are a constant source of worry among those who serve large groups in restaurants, mess halls of the armed services, and industrial dining rooms. Large numbers of individuals may be attacked with such severe symptoms of illness in a short space of time that the outbreaks are widely heralded in the press. This adds to the distress of those responsible for the food service. Among the more important causes of such food poisoning recently, two may be used as illustration: sodium fluoride, and the enterotoxin of *Staphylococcus aureus*. Both types of poison should be of great interest to those who serve food to large groups. They are important not only because they can incapacitate many workers, but also because they open the door to annoying and perhaps expensive damage suits.

Control of staphylococcus food poisoning is a major public health problem. Various difficulties are encountered, among which the most troublesome is the fact that staphylococci are widespread, and prevalent on the surface of the body and in the respiratory tract. While *Staphylococcus aureus* is usually present on the skin of most normal individuals (49), it is also usually present in skin lesions from which it may gain entrance to foods in preparation. Owing to its prevalence, therefore, it is almost impossible to prevent its presence in foods. Attempts must therefore be made to destroy it by adequate heat treatment, or the development of enterotoxin must be prevented by refrigeration. Whether all staphylococci in foods or only certain ones are potential enterotoxin-formers is not known, since satisfactory bacteriological tests for identifying those responsible have not been discovered. Dack (50) has mentioned the following as important factors contributing to staphylococcus food poisoning: proper type of food-poisoning staphylococcus in a suitable medium and favorable time and temperature for development and elaboration of enterotoxin. It was believed that temperature control was the most feasible means of preventing such outbreaks.

It is important to point out that foods which have been most troublesome in staphylococcus food poisoning are those which are semi-liquid, such as custards, hollandaise sauce, puddings, soups, salads, and comminuted meat products—rich nutrient media through which the organism easily spreads. This means that the dietitian should give special attention to preparation and handling of these products.

The first line of defense is to prevent individuals who have skin lesions, no matter how small, from working with foods. While it is true that such lesions have not been found in many outbreaks, they have been observed

in some and may be looked upon with suspicion. The *Ordinance and Code Regulating Eating and Drinking Establishments* has ruled on this problem.

A second line of defense is careful handling of those products known to be important in staphylococcus food poisoning, including strict refrigeration from the time of processing to delivery in the kitchen. It is significant that in many of the larger outbreaks, the peccant food has been carelessly handled and allowed to remain for a rather long time at temperatures conducive to bacterial growth. Some cities prevent manufacture of certain products, such as custard-filled pastries, during warm months of the year. Dietitians could well give considerable thought to these products during the summer months unless they are certain they can cope with the problems involved.

In sharp contrast with bacterial food poisonings are the mass poisonings resulting from confusion of such substances as sodium fluoride with food substances, largely due to careless storage of the insecticide where it could be confused with such substances as baking powder and flour. A spectacular outbreak at a state hospital (51) resulted in 47 deaths among 263 cases due to roach powder having been confused with powdered milk. Another instance of a similar nature occurred when an insecticide containing sodium fluoride was used in making pancakes (52). The Maryland State Board of Health, as a result, adopted a regulation requiring that all insecticides containing sodium fluoride be colored a nile blue and that all uncolored products of such nature be removed from premises on which foods are prepared. What has been said for sodium fluoride is true for other poisons used in the control of rodents and insects.

DOMESTIC SERVANTS

Domestic servants are a menace just as much as food handlers in public eating establishments, perhaps more so since they are usually without trained supervision and may have more direct contact with members of the family than restaurant food handlers, for instance, nursemaids who care for very young children. In Newark, New Jersey, a domestic servants' ordinance was passed and its enforcement placed in the division of sanitation of the city health department (53). After examination, a domestic servant card, bearing a photograph of the individual, is issued. This is a real problem since in most communities domestic servants are not subject to examination. Four domestic servants were found to be typhoid carriers in 1939, as the result of an outbreak of typhoid fever, none of whom had a history of having had the disease (54).

SUMMARY

Sufficient ordinances and regulations probably exist for keeping food clean and sanitary, but some are greatly in need of revision to make them practicable and reasonable. The real problem is the proper control of the personnel who prepare and serve foods. Unless they are trained in some manner to know why certain practices are demanded by superiors, they may negate the efforts of experienced dietitians.

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SANITIZATION OF INSTITUTION EQUIPMENT[1]

W. L. MALLMANN

Department of Bacteriology and Public Health, Michigan State College, East Lansing

EACH year the sanitization of food utensils in our institutions and public eating places becomes increasingly important. Not that more disease is spread by them but because each year as we lessen the spread of major disease through the direct avenues of infection and thus lower the incidence of infectious diseases, the greater becomes the significance of the minor avenues of infection, such as food utensils. Food utensils can be and probably are sources of infectious disease when insanitary conditions exist.

There are three reasons why good sanitary practice should be observed in the handling of food preparation and serving utensils: 1. Elimination of health hazard. 2. Elimination of microbial contaminations. 3. Esthetic. Are our reasons justified? Surely our equipment represents a health hazard, particularly the dishes returned from table use, in that they are capable of carrying disease organisms from the users. Surely the sanitization of food utensils is justified after each use to eliminate undesirable micro-organisms, both disease producers and filth organisms. Each sanitization operation makes a sharp break in the route of any disease cycle and acts as a definite barrier to disease transfer from the infected individual or the carrier to the susceptible individual.

Health hazard elimination is a necessity particularly in the hospital and sanatorium where the patients are known to be infected.

With what disease organisms are we concerned in institution equipment? Potentially, food utensils may carry nearly every infectious disease of man. We are, however, particularly concerned with those diseases transmitted from the mouth and nose. Common colds, influenza, pneumonia, diphtheria, tuberculosis, septic sore throat, trench mouth, etc., can be and likely are spread by careless dishwashing and improper sanitization. There are no reliable surveys to show this, but we do know of one or two instances where food utensils were apparently responsible. We know that utensil sanitization is a necessary part of any public health program.

Even though disease-producing micro-organisms were absent, sanitization would still be necessary to reduce contamination hazards in the preparation and serving of food. For example, it has always seemed absurd to demand a low count in pasteurized ice cream and then allow the dispenser to serve the ice cream in a dish laden with micro-organisms. The consumer has a right to demand microbial cleanliness in both food and the utensils in which it is prepared and served.

HEAT SANITIZATION

Heat is by far the best means of sanitization from the standpoint of convenience, economy, and efficiency. Heat, unlike chemical sanitization, has the property of penetration. If a utensil is in contact with heat for a sufficient period of time, it becomes heated evenly throughout to the temperature of its environment. If this temperature is high enough to effect kill, all organisms, irrespective of their location in relation to the surface or protective coverings, are reached and destroyed. A dirty utensil can actually be freed of living micro-organisms just as effectively as a clean utensil by heat sanitization. This would not be true if chemical treatment were used.

In the food establishment where hot water is available, no other means of sanitization need be used, except in those instances where heat cannot be applied conveniently.

There is really little excuse for poor sanitization by hot water treatment. A study[2] was made to determine the rates of kill of organisms by moist heat indicative of the presence of disease-producing organisms, measuring kill on a percentage basis. The organisms used experimentally were *Escherichia coli*, *Streptococcus fecalis*, and *Staphylococcus aureus*. Temperatures of 120, 130, 140, 150 and 160°F. were used. Exposure periods were 15, 30, 45, 60, and 90 sec. and 2, 3, 5, 10 and 20 min. Percentage reductions for each organism are presented in Tables 1–3. It will be observed that *Escherichia coli* was destroyed to the extent of 99.9 per cent in 15 sec. at 150° F.; 99.9 per cent in 60 sec. at 140° F. The resistance of *Escherichia coli* to heat is similar to that of gram-negative disease-producing bacteria.

Staphylococcus aureus was slightly more resistant. A reduction of 99.9 per cent in 15 sec. and 100 per cent in 30 sec. was obtained at 150° F.; at 160° F., 100 per cent in 15 sec. *Streptococcus fecalis* was still more resistant. At 150° F., 99.9 per cent kill was obtained in 60 sec. at 160° F., 99.9 per cent in 15 sec. These organisms are typical of gram-positive disease-producing bacteria.

These data show that vegetative bacteria are easily destroyed by hot water and that exposures of 15 to 60 sec. at 150° F. do an excellent job of destroying any disease-producing organisms present. The data are not presented to justify the use of temperatures of 150 to 160° F. in dishwashing machines, but to show that temperatures of 170 to 180° F. assure complete destruction of pathogenic bacteria on utensils. The data also show the necessity of maintaining temperatures of 170 to 180° F. in dishwashing machines where rinse periods must be a matter of seconds. Rinse temperatures of even 160° F. would be unsatisfactory where short rinse periods are used.

In prolonged periods of operation, it is important not only that the water temperature at the start be 170 to 180° F. but that these temperatures continue throughout the period of operation. Machines should be equipped with recording thermometers, or a thermometer at least should be run through the machine at intervals and temperature recorded on a chart so that a record of each period of operation can be checked. Too often I have seen machines started at 180° F. but after 15 to 20 min. the temperature had fallen to 120° F. When dishwashing machines are installed, provisions should be made for a reserve hot water supply sufficient for continuous operation.

I am firmly convinced that all dishwashing machines should be provided with thermostatically-controlled valves so that the machine will not operate when the temperature of the rinse water falls below 170° F. Such machines are now available, and in hospitals and sanatoriums they should certainly be required so that slips in sanitization could be avoided. Further, all machines, whether operated by hand or by moving belts, should be designed so that the length of time for proper washing and rinsing operations cannot be reduced. Too often proper sanitization is not obtained because the operator rushes the dishes through the machine.

CHEMICAL SANITIZATION

Under certain conditions, hot water sanitization is difficult or highly impractical, and sanitization or disinfection by chemical agents must be used. Based on our knowledge of present sanitizing agents, it can be definitely

[1] Read before the American Dietetic Association, Chicago, October 27, 1944.

[2] Mallmann, W. L., and Devereux, E. D.: Unpublished data.

stated that this type of sanitization is possible only when the surface is free from soil and surface films of either organic or inorganic nature. Space does not permit a discussion of cleaners and methods of attaining clean equipment. In the following discussion of chemical sanitization, it must definitely be remembered that we ar treating clean equipment.

TABLE 1

The percentage reduction of Escherichia coli by moist heat

TIME OF EXPOSURE	120° F.	130° F.	140° F.	150° F.
15 sec.				99.99
60 sec.	26	55	99.92	
3 min.	52	60	99.99	
5 min.	59	60	100	
10 min.	76	79		
20 min.	55	97		

TABLE 2

The percentage reduction of Staphylococcus aureus by moist heat

TIME OF EXPOSURE	120° F.	130° F.	140° F.	150° F.	160° F.
15 sec.				99.95	100
30 sec.				100	
60 sec.	16	8	96		
3 min.	51	55	99.99		
5 min.	62	83	99.99		
10 min.	70	96.4	100		
20 min.	87	100			

TABLE 3

The percentage reduction of Streptococcus fecalis by moist heat

TIME OF EXPOSURE	120° F.	130° F.	140° F.	150° F.	160° F.
15 sec.				85	99.99
30 sec.				95.1	
45 sec.				99.4	
60 sec.		0	69	99.9	
90 sec.				99.9	
2 min.		20		99.99	
3 min.		25	74	99.99	
5 min.		25	90		
10 min.		25	99.89		
20 min.	0	25	100		

Sanitization by either heat or chemical agents should be applied as a safety precaution—a process whereby stray vegetative cells which fail to rinse from the surfaces of clean equipment during the cleaning process are destroyed. Sanitization, in no sense, is a short-cut substitute for good cleaning procedures.

TYPES OF COMPOUNDS FOR CHEMICAL FOOD SANITIZATION

No chemical sanitizing agent that is toxic to humans should enter the food preparation rooms. This requirement excludes immediately most types of disinfectants. The least toxic products are the oxidizing agents which until recently have been the only class of sanitizers acceptable for food preparation rooms; in the last few years, however, a new series of compounds, the quaternary ammonium compounds (cationic), relatively nontoxic, have appeared.

The oxidizing agents are widely used. The principal compounds in this group are the sodium and calcium hypochlorites, the latter sold in powder form. The concentration of available chlorine in these products ranges from 23 to 70 per cent. The cheapest product is chlorinated lime with an available chlorine content of 23 per cent. Nationally advertised products such as HTH (70 per cent available chlorine), Perchloron (70 per cent available chlorine) and B-K powder (50 per cent available chlorine) are widely used. In using these, the most satisfactory results are obtained by dissolving the powder in water, permitting the solids to settle and then using the decanted chlorine solutions.

The sodium hypochlorites are sold in liquid form with the exception of Diversol (3.25 per cent available chlorine). Most of these compounds carry an available chlorine concentration of at least 3.5 per cent. Many well-known brands of clothes bleaches, such as Clorox, White Sail, and Roman Cleanser, are good sources of sodium hypochlorite solutions.

Another group of chlorine oxidizers is the chloramines. These compounds are more stable than the hypochlorites and can be used in hot water rinses. The chlorine is liberated much more slowly than in the hypochlorites so they must be allowed a longer contact time for effective action. The best-known commercial preparation of this type is Sterichlor with an available chlorine content of 3.6 per cent.

The quaternary ammonium salts are used to a limited extent at present, but they offer considerable possibilities. The speed of reaction of these compounds compares favorably with that of the chloramines. They are very stable and behave well in hot solution. They have excellent wetting properties, *i.e.*, they wet the surface of the bacterial cells, making it more easy to effect kill. The compounds behave well in the presence of organic matter and retain their germicidal activity. These compounds may find wide applications in food equipment sanitization.

In the application of chemical sanitizers certain principles must be observed.

First, it is very important that sufficient time of exposure be allowed to effect kill. It must be remembered that micro-organisms die at a logarithmic rate. Most of the organisms die in a very short period (10 sec.), but a significant number take a much longer time, particularly organisms that are surrounded by other organisms, as in clumps of bacteria. Any action should last for at least 30 sec., or longer if possible. Equipment should be clean before it is sanitized, in which case most of the micro-organisms have been removed by the cleaning process and therefore the microbial residuum on the utensils is low and the time necessary to effect sufficient kill accordingly relatively short.

Second, the amount of disinfectant applied to the surface should be greatly in excess of the necessary lethal dose so that as the disinfectant is dissipated by use, a sufficient residuum will provide lethal doses for all organisms on the utensils treated during the period the solution is in use. A dose of 100 to 200 p.p.m. available chlorine should be applied so that losses due to oxidation of organic matter present will not use up the chlorine before all bactericidal action has been complete. In all sanitizing processes the used solution should still contain 50 or more p.p.m. available chlorine.

Third, temperature plays an important role in rates of reaction between organism and disinfectant. Roughly, an increase of 10° C. doubles the activity of a given amount of compound. The warmer the sanitizing solution, the more rapid the action up to the temperature where the disinfectant is driven from the solution by heat.

MEASUREMENTS OF SANITARY ATTAINMENT

Sanitary attainment is determined objectively by measuring the number of viable micro-organisms on the utensil surface. This is easily accomplished by swabbing

approximately four square inches of surface on the utensil with a sterile cotton swab. Arrangements should be made with the bacteriological laboratory to test utensils at least twice weekly. This should be a strict routine in all hospitals and sanatoriums. In our laboratory it has been customary to swab a fork, spoon, cup, glass, and plate to obtain a complete picture representative of table service. Swab tests can also be applied to equipment in the kitchen to check cleaning and sanitizing practices.

When bacterial counts exceed 100 per unit, sanitizing procedure or handling and storage following sanitization are faulty, in which case steps should be taken immediately to remedy conditions. Subsequent swab tests will serve to indicate whether proper results have been attained.

The swab test gives the supervisor a numerical measurement of sanitation that is readily understood by kitchen help. Posting the report near the dishwashing machine reminds the operators of a job well done or a need for better operation. The reports also aid the supervisor in explaining to the operators the need of more care in cleaning and sanitizing.

SUMMARY

Good cleaning with hot water and a good detergent is probably ninety-nine per cent of the sanitization process. When a surface has been properly cleaned, most of the bacteria are flushed away in the wash and rinse waters.

Hot water and chemical treatment is really a safety precaution to ensure the destruction of any undesirable bacteria that remained on the utensils after proper washing.

Cleaning and sanitization should be applied to all utensils and equipment that contact food during storage, processing and serving.

National Food Situation. Of a total of 6 billion pounds meat available for the January-March quarter, civilians were allocated nearly 4 billion pounds, or about 15% less than during October-December 1944, according to a USDA release. The decrease was due mostly to a substantial reduction in veal, lamb and mutton supplies. U. S. military and war services were allocated 1½ billion pounds (mostly pork). Chicken was allocated for the first time, beginning January 1; more than three fourths of the total supply estimated to be available January-March has been allocated to civilians, with U. S. military and war services getting most of the remaining supply. It is expected that civilians will receive a larger proportion of total supplies of chicken in succeeding quarters of 1945.

Civilian supplies of butter during 1945, based on tentative allocations, are expected to average slightly more than 10 lb. per person, compared with estimated consumption of about 12 lb. in 1944 and more than 16½ lb. in the prewar period. U. S. armed forces were originally allocated 30,000,000 lb. butter for January-March, but requirements have recently increased, and to meet these needs, 20% of the creamery butter produced in February and 25% produced in March will be set aside for sale to Government agencies. The bulk of the allocation for "export programs" is for Russian front-line and hospital use. Civilian supplies of other edible fats and oils are almost as large as estimated consumption during October through December.

The Cheddar cheese allocation for January-March is about 107,000,000 lb., compared with approximately 95,000,000 lb. consumed in October-December; all other cheeses, 53,000,000 lb., compared with about 45,000,000 lb. War programs (other than U. S. military allocations) including lend-lease, Red Cross, territorial emergency, etc., have been allocated approximately 72,500,000 lb. Cheddar cheese, most of which goes to the United Kingdom.

Civilian supplies of evaporated milk for the 3-month period are approximately unchanged. A 10,000,000 lb. reserve of condensed milk for shipment to liberated areas will be available if needed.

Civilian supplies of sugar will be sharply lower in 1945, the January-March allocation of 1,200,000 tons being approximately 225,000 tons lower than in the last quarter of 1944, and 112,000 tons below the corresponding period in 1944.

The civilian allocation of pepper was increased from 3,276,000 lb. for October-December to 3,897,000 lb. for January-March. WFA states that since our imports of pepper have been negligible during the war period, supplies must be provided out of stocks on hand at the beginning of the war.

Most other major foods (such as canned fruits and vegetables) either are allocated on a pack-year basis, or are not allocated at all since the supply is considered sufficient to meet unrestricted demand, or are consumed almost exclusively by U. S. civilians so that no division between claimants need be made.

Eggs, for instance, probably will be plentiful throughout the year for civilians and at the same time it will be possible to fill all essential war demands for dried, shell or frozen eggs, according to WFA. Fluid milk and citrus fruit for fresh use will be in good supply for civilians. The over-all fresh vegetable situation shows supplies to be about 35% above average for January-March, though below the record supplies available in 1944.

Beginning January 21, packers operating under federal inspection were required to increase from 3¾ to 4½% the quantity of pork loins to be set aside, and from 50 to 60% of lard production to meet requirements of the armed forces, other war services and lend-lease.

When civilian supplies of butter were reduced for February and March, WFA stated that there was little hope of improvement in the butter situation for civilian consumption. WFA ordered 50% of the production of spray-process nonfat dry milk solids to be set aside for Government agencies during February and March. The previous quota was 40%. WFA indicated that Government requirements for milk powder, including both spray- and roller-process, were increasing and that large supplies were now being made available for shipment to liberated areas for feeding purposes.

Packers of California pilchards, Pacific mackerel and horse mackerel, have been asked by WFA to increase quotas for government agencies from 55 to 100%.

WFA officials indicated that war requirements for Cheddar cheese will continue at high levels, and that set-aside quotas probably would be raised during March and April when production increases seasonally. Substantial quantities of canned process cheese are also needed for lend-lease shipment.

WFA in January offered for sale to the original processors approximately 163,516 cases of canned green beans from the 1942 and 1943 pack; and to frozen egg processors and packers approximately 10,000,000 lb. frozen eggs located in the northeast region and Detroit. Other items offered for sale were 1,467,241 lb. vegetable oil shortening, and 20,338 boxes dried prunes from the 1942 crop.

According to recent set-aside percentages for canned fruits and vegetables, of the estimated production of the 13 major canned fruits this year, U. S. civilians should get about 22,700,000 cases compared with 23,800,000 cases from last year's pack; and about the same quantity of this year's pack of major canned vegetables as from last year's pack—about 102,000,000 cases. Packers are required to set aside 100% production of the following: canned blueberries, sour cherries, and carrots.

Canners of orange juice produced from fruit grown in Florida and Texas were ordered to confine their sales, deliveries and shipments to the armed forces, effective January 30. Similar action was taken January 18 with reference to grapefruit juice and blended orange and grapefruit juice.

Handlers of fresh apples grown and located in Washington and Oregon have been required to set aside their entire holdings of Winesap, Newtown and Delicious (except Golden Delicious) varieties to meet military and war service requirements.

NUTRITIONAL STATUS OF MIDWESTERN COLLEGE WOMEN[1]

EVA. G. DONELSON,[2] P. MABEL NELSON,[3] MARGARET A. OHLSON, MARTHA S. PITTMAN,[4] RUTH M. LEVERTON,[5] HUGHINA McKAY,[6] GLADYS M. KINSMAN,[7] WILLIAMINA ARMSTRONG,[7] AND MAY S. REYNOLDS[8]

OVER a period of years the nutritional status of college women has been under investigation in seven midwestern schools located in the states of Iowa, Kansas, Minnesota, Nebraska, Ohio, Oklahoma, and Wisconsin. Identical methods of procedure and coordinated plans of study were followed at all cooperating institutions (1–3). Some schools participated in all phases of the investigation; others, only in certain aspects. These studies entailed an analysis of the dietary habits of the students and an assessment of their physical status by the application of certain somatic and physiological measurements. The observations were made during the time between the "depression" and the present war, through the years 1936–42. Food choices were determined by the evaluation of weekly dietary records. The nutritional status was determined with the aid of certain anthropometric measurements, basal metabolism determinations, and blood studies which included estimation of hemoglobin, determination of the number of red cells, the red cell diameter, packed cell volume, and ascorbic acid content of the plasma.

Early searches for objective methods of judging the state of nutrition resulted in widespread use with children of height-weight measurements by ages (4). Bigwood (5) describes the usefulness of such measurements as follows: "A study of the trend of the mean weight and mean height of children and adults in the same social group from year to year, or a comparison between such values obtained at the same period in different social groups, can provide interesting data on the state of nutrition." Weight and height observations, chest breadth and depth, the circumference of each arm and of the left leg, and pressure measurements of each hand were made in the present study. The mean value for each of the measures derived from observations on a total of 1013 persons, ranging in age from 16 to 30 yr., from the states of Iowa, Kansas, Minnesota, Ohio, and Oklahoma appears in Table 1 (6). Means are recorded in Table 2 for women aged 17 to 21 yr. inclusive, the age groups in which the greatest number occurred. Earlier records of the height and weight of college women residents of three of the states represented in the current report, namely, Iowa, Minnesota, and Ohio, show the mean height and weight for the young women in the present study to exceed those same measurements recorded in the previous observations (6).

Basal metabolism tests were done on 1179 college women under the usual standard conditions, using a closed-circuit portable apparatus of the Roth-Benedict type (7). The ages of 75 per cent of the students were 18 to 21 yr., inclusive. The mean basal rate, expressed in calories per square meter per hour, varied in this age group for the women from the several states as follows: Iowa, 34.6 to 35.1 calories with a mean of 34.9 calories; Kansas, 32.8 to 33.6 with a mean of 33.1; Minnesota, 33.5 to 35.7 with a mean of 34.4; Ohio 33.8 to 34.8 with a mean of 34.1; Oklahoma, 31.1 to 34.0 calories with a mean of 33.0. A significant difference in the basal metabolic rate between states was found and it appears that women who reside in a warmer climate, namely, the states of Kansas and Oklahoma, tend to have a slightly lower rate than women studied in other states (7).

Indications from the literature are that the basal metabolism standards in use for women are high, especially in late adolescence and early adulthood. The deviations of the metabolic rates of these young women from the accepted Boothby-Sandiford prediction tables recorded in Table 3 support this belief.

Estimations of hemoglobin concentration and erythrocyte count are common laboratory procedures used in the assessment of the status of nutrition. The data herewith presented are mean values for young women from the states of Iowa, Kansas, Minnesota, Nebraska, Oklahoma, and Wisconsin. Because hematological values which are averages of determinations on presumably healthy persons are designated as normal levels (8), the data accumulated in the present study can be considered to express norms for women of college age residing in the midwestern region. Concerning these measurements, Wiehl (8) states, "Since the reason for having standard or 'normal' values is to appraise individual values, it is important that standards be derived from a sample that is representative of persons to whom they are applied." Two additional hematological measures used included packed red cell volume and red cell diameter determinations. These data for hemoglobin concentration, erythrocyte count, and packed cell volume are presented in Table 4 (9). The mean of the red cell diameter measurements, done only at Minnesota, made on 250 blood samples taken from 80 persons, was found to be 7.35 ± 0.19 microns, when Hayem's solution was used as the diluent (10).

The mean fasting ascorbic acid level of the blood plasma in 582 students consuming freely chosen diets was found to be 0.66 mg. per 100 cc., using the method of Farmer and Abt (11). In Table 5 the values are given for the subjects, sorted according to the state of their residence. The plasma ascorbic acid value recently suggested (12) as indicative of adequate nutrition is 0.8 mg. per 100 cc.

Parallel with the investigation of the nutritional status of these college women, their dietary habits were assessed. Weekly records of the food chosen by 3432 students from the states of Iowa, Kansas, Minnesota, Nebraska, Ohio, and Wisconsin have been studied (13). The percentage whose dietaries contained one or more servings daily of the following essential foods were: 71 per cent, one or more cups milk; 60 per cent, one or more servings green and yellow vegetables; 43 per cent, one or more servings citrus fruit and tomatoes; 34 per cent, one or more servings whole grain products; and 86 per cent, meat once or twice daily.

Further studies of freely chosen diets were made at Ohio State University and Kansas State College (14) and Iowa

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[2] With the assistance of L. M. Wall and D. A. Grambow. Paper No. 2165, Scientific Journal Series, Minnesota Agricultural Experiment Station, St. Paul 8.

[3] With the assistance of C. M. Young, V. Minnich, K. D. Widness, A. B. Caldwell, A. J. Leith and P. Rehm. Journal Paper No. J-1207, Iowa Agricultural Experiment Station, Ames. Project No. 538.

[4] With the assistance of L. Ascham, D. Cederquist, and B. K. Watts. Contribution 121, Department of Home Economics, Kansas Agricultural Experiment Station, Manhattan.

[5] With the assistance of A. J. Marsh. Published with the approval of the Director as Paper No. 355, Journal Series, Nebraska Agricultural Experiment Station, Lincoln.

[6] With the assistance of M. B. Patton. Approved for publication by the Ohio Agricultural Experiment Station, Wooster.

[7] Approved for publication by the Oklahoma Agricultural Experiment Station, Stillwater.

[8] With the assistance of E. J. Meiller and L. A. Hill. Approved for publication by the Wisconsin Agricultural Experiment Station, Madison.

TABLE 1

Mean values for each physical measurement of 1013 college women, by states

	IOWA		KANSAS		MINNESOTA		OHIO		OKLAHOMA	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Number of subjects	(356)		(88)		(187)		(160)		(222)	
Stature, *cm.*	164.0	6.24	164.8	6.28	164.2	5.70	161.4	5.90	163.2	5.58
Weight, *kg.*	57.6	7.54	58.4	9.12	57.5	7.21	55.8	8.12	56.5	7.92
Chest, lateral, *cm.*	25.3	1.52	25.9	1.70	25.9	1.50	25.2	1.57	26.2	1.65
Chest, anteroposterior, *cm.*	18.4	1.46	18.0	1.53	18.4	1.25	18.3	1.49	19.1	1.20
Arm circumference, right, *cm.*	27.0	2.31	26.6	2.66	26.7	2.42	26.3	2.60	25.7	2.42
Arm circumference, left, *cm.*	26.4	2.46	26.1	2.71	26.5	2.44	25.9	2.65	25.3	2.57
Leg circumference, left, *cm.*	36.1	2.47	35.8	2.98	35.7	2.29	35.0	2.45	35.4	2.46
Pressure, right hand, *kg.*	33	5.15	33	4.86	30	4.50	31	4.76	30	5.37
Pressure, left hand, *kg.*	30	5.12	30	4.56	26	4.11	29	5.09		4.94
Mean age, *yr.*	19.5		19.4		19.8		18.5		18.7	

TABLE 2

Mean values for the physical measurements of 937 freshman college women according to age, for all states

AGE	NUMBER OF SUBJECTS	STATURE	WEIGHT	CHEST DIAMETER		ARM CIRCUMFERENCE		LEG CIRCUMFERENCE	PRESSURE	
				lateral	anteroposterior	Right	Left	Left	Right hand	Left hand
		cm.	*kg.*	*cm.*	*cm.*	*cm.*	*cm.*	*cm.*	*kg.*	*kg.*
17	55	162.4	55.6	25.7	18.6	26.1	25.6	35.2	29	26
18	328	163.6	56.9	26.1	18.5	26.4	25.9	35.5	32	27
19	301	164.0	57.6	25.9	18.5	26.6	25.9	35.8	32	28
20	178	163.4	56.6	25.4	18.2	26.3	26.0	35.5	31	28
21	75	164.4	58.6	25.8	18.7	27.1	26.8	36.0	32	28
Mean....		163.7	57.1	25.9	18.5	26.5	26.0	35.6	32	28

State College (15). At Ohio and Kansas the calorie value of the food eaten was determined by laboratory analysis of an aliquot; at Iowa, by calculation, using their table of food values. A total of 58 students was included: 15 at Ohio, 12 at Kansas, and 31 at Iowa. The number of days of sampling varied: 5 days in some cases, 7 in another, and in four instances the sampling periods were as follows: 14, 56, 67, and 119 days. The mean energy value of the diets of all 58 students was 1930 calories per 56 kg. body weight; for the diets of the Ohio students, 1837 calories; for the Kansas dietaries, 2169; and for the diets of the Iowa group, 1836. A similar study was conducted earlier in Oklahoma (16), in which the energy value of the dietaries of the 18 college women observed was 2147 calories per day when adjusted to a body weight of 56 kg., or near that recommended by the Food and Nutrition Board, National Research Council, for sedentary women.

The protein, calcium, and phosphorus content of the freely chosen diets of 27 college women (15 from Ohio State University and 12 from Kansas State College) was determined by analysis of an aliquot (17). The length of the study periods varied from 1 to 8 consecutive weeks. Four of the 27 students consumed diets averaging less than 1 gm. protein per kilogram body weight per day; all 16 whose calcium intakes were studied attained the level of 0.8 gm. daily, or the N.R.C. recommended amount; the phosphorus intake in 4 out of 16 cases fell somewhat below Sherman's recommended standard of 1.32 gm. daily.

The quantitative requirements for calcium, phosphorus, and nitrogen in the dietaries of women between the ages of 17 and 25 yr. were studied by the metabolic balance method (18), with 124 women from the states of Iowa, Kansas, Nebraska, and Ohio as subjects. The level of intake of the above three elements was found to influence the retention to a significant degree, whereas place, age, and weight did not. The addition of 500 I.U. vitamin D to the daily diet did not increase the absorption of calcium and phosphorus significantly (19). The conclusions were that the mean daily consumption of 0.8 gm. calcium, 1 gm. phosphorus, and 9 gm. nitrogen (56 gm. protein), respectively, were required for equilibrium. The investigators of this phase of the study have suggested that for women of ages 17 through 24 yr., a calcium allowance of 1 gm. daily should be recommended.

Based on iron metabolism studies with 100 Nebraska college women serving as subjects (20), and previous studies carried out in the same laboratory, it was concluded "that if the diet is generous in essential nutrients, other than iron, which have been shown to promote efficient iron absorption and utilization, there will be a sufficient amount of iron to meet daily needs and to replace that lost during menstruation even at as low a level of intake as 7.21 mg. daily." In an earlier publication (21) it was indicated that a diet rich in protective foods not only provides iron but assures a liberal supply of other essential nutrients which are necessary for the efficient use of iron. It is of notable and practical importance and of theoretical interest that a similar conclusion was drawn from the calcium studies cited in the preceding paragraph. On the same level of calcium intake, diets so planned as to be adequate in all other nutrients allowed for a higher retention of calcium than did freely chosen diets, less adequate in other respects. The authors concluded, therefore, that smaller amounts of both iron and calcium were more efficiently utilized when the diet was adequate in other nutrients.

Findings accumulated to date from the cooperative project of the north central states dealing with the nutritional status of college women, record a composite picture of these students. In retrospect, certain differences have been noted between the findings in the current study as compared with observations reported earlier. Similarly, the present extensive survey, made at this time, will serve as a reference point for subsequent studies.

SUMMARY

The college woman student of the midwestern states is taller and heavier than her predecessors. Her basal metabolism rate varies, depending on the state of her residence. For students ranging in age from 18 to 21 yr., inclusive, the mean energy expenditure in calories per square meter per hour by states is 34.9 for Iowa, 33.1 for Kansas, 34.4 for Minnesota, 34.1 for Ohio, and 33.0 for Oklahoma. The average hemoglobin value is 13.4 gm. per 100 cc.; red cell count, 4.56 millions per cu. mm.; hematocrit, 40.9 per cent; red cell diameter, 7.35 microns; and plasma ascorbic acid value, 0.66 mg. per 100 cc.

A qualitative assessment of the diets reveals a notable lack in the amount of citrus fruits and tomatoes used, and an inadequate intake of green and yellow vegetables, and milk. Although the number of students eating whole

TABLE 3

Deviations from Boothby-Sandiford modifications of Du Bois normal basal metabolism standards

AGE	BOOTHBY-SANDIFORD STANDARDS	SUBJECTS	IOWA DEVIATION	SUBJECTS	KANSAS DEVIATION	SUBJECTS	MINNESOTA DEVIATION	SUBJECTS	OHIO DEVIATION	SUBJECTS	OKLAHOMA DEVIATION
yr.	*cal./sq. m./hr.*	*no.*	%	*no.*	%	*no.*	%	*no.*	%	*no.*	%
17	37.4	16	−4.01	38	−6.42			34	−2.67	8	−8.02
18	37.3	31	−5.90	58	−9.92	34	−4.29	40	−9.38	19	−8.85
19	37.2	48	−5.91	77	−10.75	76	−6.18	35	−8.60	25	−9.68
20	36.9	52	−4.88	89	−11.11	65	−8.13	22	−5.69	20	−12.47
21	36.9	50	−6.23	56	−10.30	48	−9.21	32	−7.86	9	−15.72
22	36.9	38	−6.23	37	−11.38	37	−9.21	9	−6.23		
23	36.9	18	−5.15	13	−13.96	15	−9.76				
24	36.9	11	−7.59	11	−12.20	12	−12.74				

TABLE 4

Hemoglobin values, erythrocyte counts, and red cell volumes of 4550 college women, by states

STATE	HEMOGLOBIN			RED CELL COUNT			CELL VOLUME		
	Subjects	Mean	Standard deviation	Subjects	Mean	Standard deviation	Subjects	Mean	Standard deviation
	no.	*gm./100 cc.*	*gm./100 cc.*	*no.*	*Millions /cu. mm.*	*Millions/cu. mm.*	*no.*	%	%
Iowa	2934	13.4	1.18	804	4.64	0.39	602	41.4	2.28
Kansas	340	13.4	1.16	349	4.66	0.28	224	42.2	2.17
Minnesota	292	13.0	0.89	292	4.23	0.31	292	39.0	2.25
Nebraska	445	13.3	1.04						
Oklahoma	284	13.3	1.24	284	4.54	0.34	280	40.2	2.90
Wisconsin	255	13.7	1.11	63	4.75	0.42			
All states	4550	13.4	1.16	1398	4.56	0.38	1398	40.9	2.63

TABLE 5

Plasma ascorbic acid values of 582 college women, by states

STATE	SUBJECTS	MEAN	STANDARD DEVIATION
	no.	*mg./100 cc.*	*mg./100 cc.*
Iowa	67	0.81	0.41
Oklahoma	85	0.72	0.23
Minnesota	122	0.69	0.26
Nebraska	151	0.47	0.39
Kansas	157	0.70	0.32
All states	582	0.66	

grain products is low, it is anticipated that the bread enrichment program will have offset this to a degree.

The mean calorie value of the self-selected, weighed diets of a group of 58 women was approximately 2000 calories per capita. From the metabolic balance studies performed, the authors conclude that 1 gm. calcium daily might well be recommended at ages 17 to 24 yr. and that 1 gm. phosphorus and 56 gm. protein are necessary to maintain equilibrium. In the case of iron, it was found that the adequacy of the remainder of the diet is of signal importance and that with a good diet an intake of only 7.21 mg. iron daily is sufficient.

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IMPROVEMENT IN THE METHOD OF COOKING CERTAIN DEHYDRATED FOODS[1]

JANE R. SPINELLA, CAPT. CYRUS E. FRENCH, AND CAPT. GEORGE H. BERRYMAN[2]

Division of Food and Nutrition, Army Medical School, Washington

THE logistic advantages of dehydrated foods make their use in time of war especially advantageous. In certain overseas rations, dehydrated vegetables and fruits have a desirable place as a means of extending the range of foods at a minimum cost of transportation, space, and handling. While in the past the vitamin content (particularly carotene and ascorbic acid) of such foods has been a variant factor, recent evidence indicates improvement in this respect. Furthermore, these foods are an additional source of energy. None of these advantages are realized, however, unless such foods will be consumed to a reasonable extent when they are rehydrated, cooked, and served.

The desire to further the attractiveness and palatability of these foods has resulted in considerable experimentation designed to improve or investigate the yield, texture, vitamin retention (1, 2), or appearance of the cooked product. This laboratory has been engaged in such investigation in connection with the overseas hospital ration, during the course of which certain trends have appeared. It is the purpose of this report to describe certain of the more important results obtained.

We have been concerned primarily with improvement in methods of preparation, and impressed by the results obtained when the dehydrated vegetables or fruits are cooked without the customary preliminary rehydration. During experiments originally conducted some eighteen months ago, the idea presented itself that simultaneous rehydration and cooking were highly feasible in the light of the results obtained. Yield was not seriously reduced, the over-all attractiveness of the cooked product was either improved or remained about the same, total operation time was markedly reduced, and the ascorbic acid destruction was considerably lessened due primarily to the decreased preparation time. Because we believe these findings to be important, they are presented in some detail.

PROCEDURE

Comparison was made between the two methods of preparation (*i.e.*, initial rehydration plus cooking, hereafter called the "two-step" method, versus simultaneous rehydration and cooking, hereafter referred to as the "one-step" method). The following dehydrated foods were used: cabbage, cubed potatoes, julienne potatoes, carrots, sweet potatoes, cubed beets, julienne beets, onions, turnips (rutabagas), apple nuggets, and whole cranberries. In some cases, different samples of varying age were used. That is to say, some of the samples were taken from newly opened cans; others, from cans which had been opened for several weeks. These are referred to in Table 2 as "new" and "old" respectively, and are presented for purposes of contrasting ascorbic acid content.

Similar details of procedure were maintained throughout the experiments. For the same quantities of dehydrated food, the same quantities of water were used for either rehydration and cooking in the two-step method, or for simultaneous rehydration and cooking in the one-step method. In the latter case, the dehydrated food was added to boiling water and allowed to simmer slowly thereafter. In the former method, the dehydrated food was rehydrated for the prescribed length of time, then drained and weighed and returned to the water. The water was then brought to a boil and allowed to simmer for the prescribed cooking period. The vegetables were usually cooked for the length of time recommended by a manual used by the military (3) in the routine preparation of this type of food. However, in a few instances departures were made in order to improve the final product. Comparison was then made as to yields of cooked drained product obtained by the two methods. In addition, comparative appearance, flavor, consistency, and palatability were judged by well-qualified, impartial individuals who had no knowledge of the method used in the production of each dish.

It had been our original purpose to investigate only those aspects of the problem described above, since we considered them to be more immediately important. However, it was decided also to investigate the question of vitamin retention. Accordingly, similar samples of both the cooked products and the cooking waters were taken immediately upon completion of cooking for ascorbic acid analysis. Reduced ascorbic acid was determined by the method of Loeffler and Ponting (4) and total ascorbic acid by the dinitrophenyl-hydrazine method of Roe and Kuether (5).

RESULTS

The important findings may be listed under the following main headings: (a) yield of product by the two methods; (b) total elapsed preparation time for the two methods; (c) description of the final product, including consistency, color, palatability and flavor; and (d) retention of ascorbic acid.

Yield of Product. From the military standpoint, the yield of product is important, since definite quantities of foods are prescribed for 100 men. Any serious decrease in yield would therefore have the effect either of providing less than the required number of servings, or of limiting the size of each. Because of the elimination of the preliminary rehydration period from the one-step method, we had some doubt as to the effect on yield. However, all our evidence indicates that, generally speaking, no serious decrease in yield occurred. Table 1 demonstrates the relative quantities of cooked drained product obtained when 113 gm. dehydrated food was used initially. With the exception of julienne beets, the decrease in yield following elimination of preliminary rehydration is not considered of serious proportions. When large quantities of food were prepared (*i.e.*, for 50 to 100 men) the same results were obtained.

Total Elapsed Preparation Time. Any decrease in total elapsed preparation time is an advantage from the standpoint of mass feeding, provided the qualities of the final cooked product are not adversely affected. This is particularly true in the light of our experience, for whenever difficulty has been encountered in the acceptance of dehydrated foods the cause is frequently due to improper length of time devoted to rehydration or cooking, or both. If a method of preparing dehydrated foods could be devised in which the entire preparation process could be consolidated into a one-step procedure, advantages in simplicity and reduction of total elapsed time would result. The final column in Table 1 indicates the saving of time which

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[2] Miss Spinella is Food Specialist, Captain French, Assistant, and Captain Berryman, Chief, Division of Food and Nutrition. Since this Division is now expanded into the Medical Nutrition Laboratory, Chicago Quartermaster Depot, 1849 W. Pershing Road, Chicago, any correspondence should be so addressed.

resulted when the one-step method was used. The desirability of this is dependent, of course, upon maintaining desirable characteristics of the final product as mentioned above.

in many cases was more palatable. With such vegetables as onions and cabbage, a sweeter flavor and more crisp texture were produced by the one-step than by the two-step method, resulting in a more palatable product. In the

TABLE 1

Comparative yields and preparation times for the two methods

METHOD OF COOKING	DEHYDRATED VEGETABLE*	ORIGINAL WT. OF WATER	WT. OF COOKED DRAINED VEGETABLE	WT. OF COOKING LIQUID	HYDRATION TIME	COOKING TIME	TOTAL ELAPSED PREPARATION TIME
		gm.	*gm.*	*gm.*	*min.*	*min.*	*min.*
1**	Cabbage†	1021	705	294	0	35	35
2	"	1021	732	186	15	48	63
1	Potatoes, cubed†	589	526	—	0	53	53
2	" "	589	519	—	30	53	83
1	Potatoes, julienne‡	589	532	72	0	53	53
2	" "	589	553	7	30	53	83
1	Carrots, cubed†	679	458	248	0	30	30
2	" "	679	497	237	45	15	60
1	Sweet potatoes, sliced‡	453	447	62	0	40	40
2	" " "	453	450	2	30	40	70
1	Sweet potatoes, cubed†	453	313	173	0	40	40
2	" " "	453	328	127	30	40	70
1	Onion chips, compressed	792	529	312	0	20	20
2	" " "	792	585	260	20	20	40
1	Apple nuggets	827	567	342	0	40	40
2	" "	827	590	281	0	40§	40
1	Turnips, yellow, cubed	884	661	224	0	45	45
2	" " "	679	629	—	20	45	65
1	Cranberries, whole	1362	637	1508	0	50	50
2	" "	1362	778	1309	0	38§	38
1	Beets, cubed†	792	398	383	0	30	30
2	" "	792	445	352	30	30	60
1	Beets, julienne†	792	418	408	0	30	30
2	" "	792	500	327	30	30	60

* Initial quantity of dehydrated food was 113 gm.
** The numerals in column 1 are used to designate the two methods used: 1, the one-step method; 2, the two-step method.
† Figures for this vegetable are based on an average of 3 experiments.
‡ Figures for this vegetable are based on an average of 2 experiments.
§ Actually, the cooking time for the two-step method was slightly less than this figure, due to the fact that the vegetable was added to cold rather than boiling water.

TABLE 2

Comparative ascorbic acid content of dehydrated foods cooked by the two methods

SAMPLE	DEHYDRATED FOOD (AP)		COOKED DRAINED PRODUCT				COOKING LIQUIDS			
	Reduced Ascorbic	Total Acid	Reduced 1*	Total 1*	Reduced 2*	Total 2*	Reduced 1*	Total 1*	Reduced 2*	Total 2*
	mg./100 gm.	*mg./100 gm.*	*mg./100 gm.*	*mg./100 gm.*	*mg./100 gm.*	*mg./100 gm.*	*mg./100 gm.*	*mg./100 gm.*	*mg./100 gm.*	*mg./100 gm.*
Cabbage:										
Sample 1 (new)	309.0	300.0	28.9	29.1	29.5	31.1	37.5	31.5	28.6	29.2
Sample 2 (old)	116.0	116.0	7.6	8.3	5.4	5.8	8.0	9.6	6.1	7.2
Sample 3 (new)**	312.0	305.0	27.0	27.0	26.5	26.0	32.7	28.3	32.9	29.0
Potatoes, cubed	37.8	37.0	7.9	7.7	6.7	6.7	No cooking liquid			
Potatoes, julienne:										
Sample 1 (new)	54.4	56.0	10.7	11.5	8.0	9.9	No cooking liquid			
Sample 2 (old)	21.4	29.4	4.4	5.3	2.6	4.3	No cooking liquid			
Sample 3 (new)**	45.4	55.6	10.1	11.5	8.2	8.8	No cooking liquid			
Carrots, cubed	9.8	16.0	2.7	4.3	2.4	3.7	1.5	2.2	1.1	1.2
Carrots, cubed	10.9	13.8	3.0	2.8	2.3	2.4	1.2	2.7	0.7	1.5
Sweet potatoes, sliced	27.4	25.0	4.9	4.8	4.4	4.4	No cooking liquid			
Sweet potatoes, cubed:										
Sample 1	34.8	33.2	7.4	7.7	6.2	7.0	8.2	8.3	6.9	7.4
Sample 2**	39.8	40.0	5.2	7.5	3.1	6.1	8.1	9.7	4.4	7.3
Onion chips (compressed)	14.6	15.6	0.9	1.0	1.9	1.9	2.4	2.6	2.2	1.7
Apple nuggets	16.4	13.5	2.6	2.2	1.5	2.0	1.8	2.0	1.7	1.8
Turnips, yellow, cubed	61.0	64.0	5.8	8.2	5.6	7.8	6.2	5.2	No liquid	

Note: See explanation of the terms "new" and "old" under Procedure.
* Reduced and Total 1 and 2 refer to reduced and total ascorbic acid content in the one-step and two-step methods, respectively.
** Cooked in large quantities, for 65 to 100 men.

Description of Products Obtained by the Two Methods. With the exception of one or two vegetables, no difference in flavor or texture was detectable by either method of preparation. However, the product obtained with the one-step method usually showed better color retention, and

case of sliced and cubed sweet potatoes, the same degree of consistency resulted with both methods; however, the one-step method gave a more moist, sweeter, and brighter-colored potato. Beets showed a marked increase in degree of color retention in the one-step method over the two-step

method; both products were palatable, the two-step method, however, produced a more pronounced beet flavor. For julienne and cubed Irish potatoes, a more pronounced "hay" taste as well as a drier potato resulted with the two-step method. Carrots had a decided terpene flavor when prepared by either method, due perhaps to the time which elapsed after opening the can; however, the one-step method product was brighter in color and slightly less sweet in flavor. With such products as cranberries and apple nuggets there was little difference, if any, in palatability by either method. Difference in consistency, however, was noticeable in that the cranberry sauce by the two-step method was more gelatinous. On the other hand, the one-step method produced a cranberry sauce of a brighter red color. Apple nuggets prepared by both methods had the same slightly watery consistency (the amount of water prescribed was more than needed). It was noted that the two-step method resulted in a much darker apple sauce.

Retention of Ascorbic Acid. Reduced and total ascorbic acid were determined in the original dehydrated food, the cooked drained product, and the cooking liquid. This information is valuable because it provides a further indication of the occurrence of dehydro-ascorbic acid in foods, both before and after preparation. The impression which we had previously gained was verified, namely, that dehydro-ascorbic acid may be present in foods in small but significant quantities. It also appears that there may be a progressive increase in dehydro-ascorbic acid as the sample ages (and in some cases with cooking), accompanied by a decrease of the reduced form.

Table 2 indicates the degree of retention of ascorbic acid by the two methods. It is obvious that the shorter preparation time for the one-step method was responsible for the significantly higher retention of ascorbic acid in the final drained cooked product. The importance of the shorter preparation time becomes even more apparent when it is considered that even though more ascorbic acid was found in the cooking water following the one-step method, yet because of the elimination of the preliminary hydration period, the initial loss attendant to that process was avoided. The net result, therefore, was a greater retention of ascorbic acid in the final drained cooked product obtained by the one-step method.

SUMMARY

The possible advantages of simultaneous rehydration and cooking (*i.e.*, elimination of preliminary rehydration period) of certain dehydrated foods have been investigated. When all other factors are kept constant, a product of approximately equal yield is obtained (with an occasional exception), requiring a materially decreased preparation time, and generally possessing improved characteristics of palatability, attractiveness, and nutritive content. Similar results were obtained for both large and small-quantity cookery.

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Food Consumption Levels, United States, United Kingdom, and Canada. In a second report, made public January 17, the Combined Food Board stated that despite the expansion of military food needs and large shipments to the Allies, the food supplies in the United States and Canada for civilians in 1944 in most cases were, as the result of greatly increased production, maintained or increased as compared with 1943. Food supplies for civilians in the United Kingdom also showed some improvement over 1943, but continued below the United Kingdom prewar level for many foods and below 1944 levels in the United States and Canada for dairy products, meat, eggs, sugars, and fruit.

In both the United States and Canada, meat consumption in 1944 was nearly 50 lb. per capita more than that of the United Kingdom. In contrast, the consumption of potatoes and flour has increased appreciably in the United Kingdom during the war period and considerably greater quantities of these foods are now eaten in Britain than in either the United States or Canada. In 1944, potato consumption in the United Kingdom is estimated to have exceeded by 140 lb. per capita that of the United States and by 95 lb. that of Canada.

All three countries showed a general increase in consumption of fluid milk in 1944 compared with 1943. In the United States and Canada meat supplies showed an increase in 1944 but supplies of evaporated milk decreased in both countries. Other important changes were the improvement in supplies of dried eggs in the United Kingdom, which offset a continued decline in shell eggs, an increase in supplies of fresh fruits and vegetables in the United States and Canada, and the temporary increase in the United Kingdom of supplies of citrus fruit.

Butter, sugar, canned milk, and canned fruits continued to be rationed in 1944 in all three countries. In addition, the commodities rationed in the United States were margarine, cheese, the more popular cuts of meats, canned fish, canned tomatoes, catsup, and chili sauce, and certain canned juices. Other rationed foods in Canada were jams, jellies, canned fruit, honey, and syrups. Apart from bread, potatoes, vegetables, and fresh fish (which is in short supply), practically all foods were rationed in the United Kingdom.

Supplies of food in the United States and Canada, measured in nutritional terms, on a per capita basis, have increased appreciably since the prewar period. Supplies of calories, fats, animal proteins, and vitamin A are below the prewar level in the United Kingdom and supplies of other nutrients, including vegetable proteins, are appreciably higher. Food supplies of all three countries in 1944 were sufficient to maintain reasonable health.

A table in the report, which is available from WFA, Washington, shows, in pounds per capita per year, estimated supplies of food, by food groups, moving into civilian consumption in the United States, Canada, and the United Kingdom, for the prewar period, for 1943, and for 1944. It also shows 1944 supplies as percentage of prewar supplies; supplies in the United Kingdom in 1944 as percentage of those in the United States and Canada; and supplies in Canada in 1944 as percentage of United States supplies.

Knife Care. More thought given to the proper care of kitchen knives would save time and labor and make for better meals and more safety in the kitchen. Home equipment specialists of USDA say that knives are the most used—and abused—of any kitchen utensil. Today good knives are too scarce and valuable to be dulled or chipped by knocking about in a drawer with other utensils, or put to the wrong uses.

Many knives are broken by using them to open cans or pry up lids. Knife blades also may be broken by sudden changes of temperature. A knife at room temperature should not be used to slice a brick of hard-frozen ice cream. Run cold water over the knife to chill it beforehand. Never let wooden-handled knives soak in dish water, because this swells the wood and may loosen the handle.

A knife rack that keeps each knife lined up in its separate slot saves knives and time for the cook, and is easy for any carpenter to make. A strip of wood, with slits sawed in, may be fastened in a kitchen drawer that is deep enough, or may be fastened on the wall, out of reach of children but in easy reach of the cook.

A sharp knife does the best job and is actually safer than a dull knife. A dull knife is difficult to direct, and often slips and causes cuts.—*Food and Home Notes, USDA, January 29, 1945.*

USE OF DEHYDRATED VEGETABLES IN INSTITUTIONS

GENE SPENCER

Research Institute, Food Technology, The University of Texas, Austin 12

Views as to the future of dehydrated foods range from complete lack of interest in any product not well established before the war to buoyant certainty that only time and research stand between today's war products and shelves full of dehydrated foods as stable as gelatin and as quickly prepared.

The records indicate that in the past it took two wars and a gold rush to make canned foods as acceptable to civilians as the dried foods which they had used previously. Now the tables are turned and the question is: Have dehydrated vegetables been made as acceptable as canned during the present war, or must we wait for another gold rush?

If the members of the armed forces return from this war enthusiastic about dehydrated vegetables, the industry will be well launched. Even though they do not, the recognized economic and emergency advantages of these foods are great enough to warrant an effort to understand the factors which detract from the eating quality of dehydrated vegetables and to determine the cure.

The situation with regard to some of the dehydrated vegetables sent overseas appears to be as follows: Dehydrated vegetables, of first quality when they left America, arrived at the field kitchens sufficiently changed by high temperatures encountered during transportation and storage as to make the accompanying directions for preparation inadequate. The products needed cooking skill, special facilities, and extra time for preparation to compensate for the undesirable changes effected by conditions of storage and transportation. Lacking all this, the criticisms made concerning these products when served were probably justified.

The eating quality of a dehydrated vegetable, like that of any other food, is a resultant of the correlated work of those who produce it, those who transport and store it, and those who serve it. Food processors are constantly attempting to change their products in order to offset the detrimental effect of poor storage conditions and possible faulty cooking technique. Even for a food such as gelatin, these two related factors cannot be overlooked, and much less can they be ignored in the case of dehydrated vegetables. The criticisms of dehydrated foods attributable to storage and cooking faults are of interest to dietitians who may be expected to use the large-quantity packages similar to those developed for the use of the armed forces. Dietitians, too, are best qualified to make suggestions as to the preparation and seasoning of these products. They will also wish to know the quality characteristics by which dehydrated vegetables have been certified for federal contracts. These characteristics are odor, presence or absence of foreign material, color, defects, flavor, properties of rehydration, and water content, some of which are evaluated best when the vegetable is dry; others, after it has been cooked.

INSPECTION AND JUDGING OF DEHYDRATED VEGETABLES IN THEIR DRY FORM

The qualities of a dried vegetable which should be judged immediately on opening the package are odor and presence or absence of foreign material. Color may also be observed but this characteristic is of more concern after cooking. Moisture analyses are made on samples taken from the freshly opened package.

Odor. The first thing an experienced inspector does in judging a dehydrated food is to bury his nose in the top of the freshly opened package. This may be the only test necessary for the dietitian, once she has had sufficient experience with each vegetable to be able to detect the odors which cannot be eliminated or masked by cooking and seasoning. The words used to describe the odors associated with dehydrated vegetables are: "characteristic," which is of course the ideal; "haylike," which is a result of unrestrained chemical changes in flavoring materials of the fresh, uncooked vegetable; and other expressions with which every dietitian is conversant—"musty," "rancid," and "off." The chemical changes responsible for some of these undesirable odors can be prevented by thorough blanching of the vegetables in the factory before drying, a process with which every dietitian who has required the immediate blanching of freshly washed vegetables is familiar, or by sulfur dioxide treatment. Other undesirable changes result from too long storage under unfavorable conditions.

The cooking process, too, will emphasize or reduce the flavor faults due to the presence of undesirable volatile materials. Briefly, long, low-temperature cooking is better than rapid cooking at high temperature.

Foreign Material. Everyone experienced in large-quantity cooking knows that the utmost care is necessary to protect food from accidental inclusion of foreign material. Lack of such care in the processing of a dehydrated vegetable would promptly disqualify it for institutional use. The descriptive terms used in the inspection of dehydrated food are indicative of the problems with which the manufacturer must cope and the type of material for which the dietitian must be on the alert: "sticks," "dirt and stones," "hairs," "insects," "worm larvae and worm nests," "leaves not a part of the product." The presence of worms and insects may, of course, indicate faulty storage rather than production flaws.

Water Content and Keeping Quality. The water content of commercial dehydrated vegetables usually ranges from 3 per cent (cabbage) to 7 per cent (potatoes). The preservation of the eating quality of vegetables at these water levels is increased by low temperature of storage and proper packaging, by means of which undesirable chemical and physical-chemical changes are minimized.

Storage After Purchase. In selecting a storage place, dehydrated vegetables should not be confused with dried legumes and grains which are dried whole, uncut, and can be stored without damage at higher temperatures and humidities. Dehydrated vegetables, on the other hand, which have been cut to facilitate drying will keep best under cool, dry storage conditions. So-called moisture-proof and air-free containers, of course, are more effective at moderate than at high temperatures. These storage limitations of dehydrated vegetables at present are being investigated and it is hoped that eventually less protection will be required.

INSPECTION AND JUDGING OF COOKED DEHYDRATED VEGETABLES

After a vegetable has been reconstituted or rehydrated by cooking, its defects, color, flavor and texture are more fairly judged.

Defects. This term refers to those parts of the vegetable which should have been cut out or removed before drying, such as skins, potato eyes, decayed or blighted spots, discolored leaves, sunburned spots as on carrots or potatoes, and worm holes. A 2 per cent tolerance by weight calculated on the dry basis is allowable in a first-quality product,

5 per cent in a second-quality product. In making this inspection, no allowance is made for the percentage of the piece which is defective; the whole piece carrying the defect is included in the weighed defects.

Color. Color is always deepened by drying because the pigment concentration is increased. After the dehydrated pieces are cooked the concentration of the pigments is again normal and the color can be judged more accurately. However, the chemical changes in color which occur in drying or storage are not reversed by restoring the water. Green vegetables may become permanently yellowish-green or brown; white vegetables, as potatoes, may become yellow, brown, grey, purple, or may develop red centers. These colors may leach out into the water so that the drained vegetables will have an acceptable color, but if a pronounced color change has taken place in the majority of pieces, flavor changes also will usually be marked and the product unacceptable.

Flavor. The flavor of a piece of an uncooked dried vegetable will often be misleading: it may be too salty and bitter, or lacking in characteristic flavor. After cooking, all these flavors become more nearly normal, especially when the vegetable is hot. However, poor flavors associated with off-odors are usually more pronounced in the hot cooked product. Judging of flavor, therefore, must be on the latter.

In experimental runs, long-continued, low-temperature cooking tended to dispel some of the volatile and undesirable characteristics; soaking the dried vegetables at room temperature, followed by open-kettle boiling, appeared to be less effective in eliminating them. Pressure cooking did not improve flavor, while baking en casserole after the vegetables had been partially precooked at a lower temperature did improve the flavor. Tests indicate that dehydrated vegetables require more salt than fresh vegetables. One of the contributions which trained dietitians will make to the cooking of dehydrated vegetables is in the masking of slightly undesirable flavors in products otherwise of first quality, as they have learned to do with canned or even with some fresh vegetables.

Texture. Aside from flavor, the most important quality of dehydrated vegetables is their capacity to absorb water and regain the normal structure of the fresh vegetable. This restoration of structure results from the taking up of water by capillarity and by colloidal adsorption. As yet there is no satisfactory test by means of which this water restoration quality may be mechanically measured; a high value by weight may mean either capillary holding of water or a fundamental adsorption of water by particles of colloid size. At present this quality is evaluated most successfully by experienced observers who judge the cooked product by the sense of touch and other subjective tests. The eating quality, of course, is the final test.

The appearance of the cooked vegetable is intended to approximate that of the undried fresh material; that is, the corners and edges sharp and the faces flat with only a small percentage of dented surfaces. A majority of the reconstituted pieces should be without hard centers. The vegetables relatively high in cellulose tissues should be tender when cooked, the starchy vegetables should also not slough off in the cooking process, nor be waxy.

It should be emphasized that the method of cooking may determine the texture of a cooked dehydrated vegetable. Thus, the same lot of diced white potato, when cooked by different methods, had the following characteristics: homogeneous but hard throughout when dropped into boiling water and cooked for 1 hour; high percentage hollow faces when cooked in a pressure cooker; definite sloughing off tendency when boiled vigorously in a minimum of water after soaking at room temperature. The best and most consistent results were obtained by combining the process of rehydration and cooking in a single operation, namely, by cooking in a double boiler, starting with cool water in the top of the boiler and maintaining a vigorous boil in the water below. Some adaptation of this method, which completes at least three fourths of the operation at temperatures of 208 to 210°F., is believed indicated for best results in both flavor and texture. The dietitian undoubtedly will be able to devise methods of cooking dehydrated vegetables and of using the product in dishes in which the texture will be retained and flavor enhanced.

STYLES AND VARIETIES OF VEGETABLES

If the dehydration industry finds it advisable to offer its war-developed products for peacetime use, these are the vegetables which may be expected in largest amounts: potatoes (sweet and white), beets, onions, cabbage, carrots. Turnips (rutabagas) have been dried for the armed forces to a limited extent.

The styles used most commonly in subdividing the vegetables to facilitate drying have been: diced or cubed, julienne or stripped, sliced, shredded. Some vegetables have been ground to a powder after drying, as for example, tomato. These powders are designed for use in making thick soups and sauces. Their storage problem is rather difficult. Leafy vegetables have been packaged in "flake" form.

The future of the vegetable dehydration industry is still uncertain. There appears to be little doubt that the dietitian will have a great responsibility and considerable influence in deciding the future of these dehydrated products.

Annual report, Food and Drug Administration. This report, released January 12, states that approximately 67% of the 1739 food seizures effected in 1944 involved charges of filth and decomposition. Most food manufacturers, the report says, produce wholesome food in clean factories, but some operate under filthy conditions, while too many food handlers fail to protect products from insects and rodents during storage. Continuous pressure by sanitary inspections of factories and warehouses is therefore required. Among the types of food debasement proceeded against in 1944 were mineral oil substituted for food oils, saccharin in beverages, ground cocoa shells in cocoa products, soup mixes and noodles deficient in labeled ingredients, and prepared cereals substituted for nuts and cocoanut. Enforcement of food standards is of particular importance to consumer welfare during wartime rationing; no one is willing to forfeit blue or red points for water, fillers, or short measure. Low-fat butter led the list of substandard rationed foods seized. Canned fruits and vegetables seized because they are below standard in quality may appear on the market only after the owner has relabeled them "substandard" and has declared the defects on the label.

Tonics and products containing vitamins and minerals accounted for about one third of the drug preparations seized for unwarranted claims, "many based on false insinuations that the normal diet is inadequate to supply the consumer with the nutritional elements he requires."

Other subjects covered in the report include the formulation of food standards, new regulations, food-poisoning investigations, pharmacological assays and insulin control, the certification of coal-tar colors, actions on cosmetics and therapeutic devices, and new drugs. Prominent in the Food and Drug Administration's war activities is its part in the combined efforts of government agencies and manufacturers to develop penicillin.

ASCORBIC ACID CONTENT OF FRESHLY HARVESTED VEGETABLES[1]

FRANCES O. VAN DUYNE, SARA M. BRUCKART, JEAN T. CHASE, AND JEAN I. SIMPSON

Department of Home Economics, University of Illinois, Urbana

DURING the past 3 years values for the ascorbic acid content of 14 freshly harvested vegetables have been obtained and are reported herewith. These figures are based on determinations not only on different varieties of several vegetables but also on the same variety grown in consecutive years. The increasing importance of knowledge concerning the nutritive value of foods makes the presentation of these data timely.

All of the vegetables were grown under the supervision of the Department of Horticulture, University of Illinois, and unless otherwise indicated were harvested at the optimum stage of maturity for table use. Ascorbic acid was determined according to the procedure described by Van Duyne *et al.* (1), which is based on the titration method of Tillmans *et al.* (2) as modified by Bessey and King (3) and Bessey (4). In some instances 6 instead of 5 portions of metaphosphoric acid were required to obtain complete extraction of the ascorbic acid and in 1941 the dye solution was standardized according to the method of Menaker and Guerrant (5). Ascorbic acid determinations were made on the day the vegetables were harvested, care being taken to ensure adequate sampling of the amounts received. Results are presented in Table 1.

[1]The authors wish to express their appreciation to Brayton L. Weaver of the Department of Horticulture for supplying the vegetables used in this study and to Janet L. Retzer for her help in preparing the samples. Received for publication August 4, 1944.

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TABLE 1

Ascorbic acid content of freshly harvested vegetables

VEGETABLE	VARIETY	DATE HARVESTED	REMARKS	MOISTURE	NUMBER OF DETERMINATIONS	ASCORBIC ACID CONTENT	
						Range of values Fresh wt. basis	Mean and average deviation Fresh wt. basis
				%		*mg./gm.*	*mg./gm.*
Broccoli	Italian Green Sprouting	9–24–41		86.9 ±0.2	5	1.20 –1.36	1.28 ±0.06
	" " "	9–28–42	buds only		4	0.91 –1.38	1.22 ±0.16
	" " "	10–12–42	" "		4	1.26 –1.40	1.32 ±0.06
	" " "	9–28–42	stems only		4	1.38 –1.72	1.52 ±0.11
	" " "	10–12–42	" "		4	1.17 –1.29	1.24 ±0.04
Cabbage	Racine Market	10– 8–42	core not included	92.6 ±0.1	6	0.47 –0.49	0.47 ±0.00
	" "	10– 4–43	" " "	93.2 ±0.3	6	0.42 –0.45	0.43 ±0.01
	" "	10–25–43*	" " "	92.4 ±0.0	6	0.45 –0.48	0.47 ±0.01
	Resistant Detroit	10– 8–42	" " "	92.6 ±0.1	6	0.46 –0.49	0.48 ±0.01
	" "	9–30–43	" " "	92.9 ±0.1	6	0.40 –0.43	0.41 ±0.01
	" "	10–25–43	" " "	92.8 ±0.1	5	0.44 –0.45	0.45 ±0.00
	Wisconsin Golden Acre	10– 8–42	" " "	92.7 ±0.3	6	0.40 –0.46	0.42 ±0.02
Carrots	Chantenay	7–10–42	young, scraped	89.4 ±1.0	6	0.039–0.063	0.052 ±0.006
	Danver's Red Core	7–24–42	" "	89.3 ±0.2	6	0.062–0.097	0.079 ±0.008
	Imperator	7–17–42	" "	89.3 ±0.8	5	0.047–0.100	0.070 ±0.013
	"	7– 2–43	" "	88.0 ±0.3	6	0.097–0.160	0.120 ±0.015
	"	9– 4–42	mature, "		6	0.045–0.089	0.072 ±0.014
	"	9–17–42	" "	90.3 ±0.1	6	0.050–0.088	0.068 ±0.009
	"	8– 9–43	" "	88.3 ±0.2	6	0.051–0.066	0.060 ±0.005
	Improved Chantenay	9– 5–42	" "		6	0.048–0.076	0.063 ±0.009
	Nantes Coreless	7–21–42	young, "	89.8 ±0.2	6	0.049–0.071	0.060 ±0.005
	" "	7– 2–43	" "	88.2 ±0.6	6	0.089–0.130	0.103 ±0.011
	" "	7–21–43	" "	89.3 ±0.3	3	0.060–0.090	0.070 ±0.010
	" "	9– 2–42	mature, "		6	0.041–0.074	0.061 ±0.008
	" "	9–17–42	" "	91.9 ±0.1	6	0.041–0.060	0.055 ±0.005
	" "	8–10–43	" "	89.0 ±0.7	6	0.044–0.070	0.052 ±0.008
	Oregon	7–28–42	young, "	89.6 ±0.4	6	0.057–0.100	0.078 ±0.010
	Red Core Chantenay	7– 9–43	" "		6	0.069–0.081	0.074 ±0.004
	" " "	8–14–42	mature, "	90.6 ±0.2	6	0.065–0.091	0.077 ±0.006
	" " "	9– 3–42	" "		6	0.046–0.066	0.054 ±0.007
	" " "	9–15–42	" "	92.5 ±0.2	5	0.044–0.062	0.053 ±0.005
Celtuce		10–13–41	leaves	92.3 ±0.2	3	0.41 –0.45	0.44 ±0.02
		8–14–42	"	89.7 ±0.6	3	0.53 –0.55	0.54 ±0.01
		10–13–41	stems		3	0.041–0.044	0.043 ±0.001
		8–14–42	"	95.1 ±0.1	3	0.055–0.064	0.059 ±0.003
Corn	Golden Cross 49	8– 7–42		70.0 ±0.8	6	0.13 –0.17	0.14 ±0.01
	" " "	8–23–43		73.3 ±0.8	6	0.16 –0.18	0.17 ±0.01
	Golden Cross 100	8– 7–42		68.1 ±0.4	6	0.13 –0.16	0.14 ±0.01
	Golden Hybrid 8314	8– 5–42			6	0.09 –0.14	0.10 ±0.01
	Ioana	8– 5–42		75.4 ±3.9	6	0.13 –0.21	0.18 ±0.02
	92 x 28	8– 5–42			6	0.13 –0.20	0.15 ±0.02

(Cont'd)

TABLE 1—*Continued*

VEGETABLE	VARIETY	DATE HARVESTED	REMARKS	MOISTURE	NUMBER OF DETERMINATIONS	ASCORBIC ACID CONTENT	
						Range of values Fresh wt. basis	Mean and average deviation Fresh wt. basis
				%		*mg./gm.*	*mg./gm.*
Eggplant	Ft. Meyers Market	8–20–42		92.8 ±0.7	6	0.055–0.083	0.063 ±0.009
	New Orleans "	8–24–42		92.8 ±1.0	6	0.037–0.067	0.051 ±0.006
	New York Improved	8–25–42			5	0.027–0.060	0.043 ±0.012
Mustard greens		9–28–42			6	1.07 –1.42	1.26 ±0.11
Peas	Asgrow #40	6–21–43		80.9 ±0.5	6	0.27 –0.31	0.29 ±0.01
	"	6–28–43		76.5 ±2.4	6	0.19 –0.29	0.23 ±0.03
	Cleveland Alaska	6–11–43		76.7 ±0.6	6	0.30 –0.32	0.31 ±0.01
	Dark Podded Thomas Laxton	6– 9–42			2	0.27 –0.29	0.28 ±0.01
	" " " "	6–16–43		80.9 ±0.1	4	0.21 –0.23	0.22 ±0.01
	Dwarf Tom Thumb	6– 9–42	slightly overmature	72.3 ±1.0	2	0.27 –0.29	0.28 ±0.01
	" " "	6–14–43	" "	76.4 ±2.0	6	0.29 –0.31	0.30 ±0.00
	Laxton's Progress	6–12–42			3	0.23 –0.30	0.27 ±0.02
	Little Marvel	6– 9–42	" "	79.8 ±0.9	2		0.25 ±0.00
	Morse Market	6–22–43		75.7 ±3.0	6	0.24 –0.27	0.25 ±0.01
	Progress #9	6–12–42	" "	76.3 ±1.0	3	0.25 –0.29	0.27 ±0.02
	Wales Hybrid	6–19–42		81.8 ±0.2	2	0.39 –0.41	0.40 ±0.01
Rhubarb	Victoria	5–12–42	unpeeled		3	0.075–0.088	0.085 ±0.005
	"	5–12–42	peeled		3	0.060–0.073	0.066 ±0.004
	"	5–12–43	unpeeled	95.6 ±0.0	4	0.060–0.070	0.066 ±0.004
	"	5–12–43	peeled	95.8 ±0.0	4	0.056–0.064	0.059 ±0.002
	"	5–13–43	unpeeled	95.4 ±0.1	4	0.070–0.076	0.072 ±0.002
	"	5–13–43	peeled	95.6 ±0.1	6	0.057–0.068	0.062 ±0.003
Snap beans	Bountiful	6–23–42			2	0.19 –0.23	0.21 ±0.02
	"	6–30–43		90.6 ±0.2	4	0.25 –0.28	0.26 ±0.02
	Commodore	6–29–42			2	0.20 –0.21	0.20 ±0.00
	Giant Stringless	7–15–42		90.6 ±0.2	6	0.18 –0.23	0.21 ±0.01
	Round Pod Kidney Wax	6–23–42			2	0.17 –0.20	0.18 ±0.02
	Sensation Refugee 1066	7– 7–42		91.0 ±0.1	3	0.18 –0.20	0.19 ±0.01
	Stringless Black Valentine	8–12–42			6	0.17 –0.22	0.19 ±0.01
	" " "	8– 5–43		92.1 ±0.5	6	0.12 –0.16	0.14 ±0.02
	" " "	8–19–43		90.8 ±0.2	6	0.22 –0.26	0.24 ±0.01
	Stringless Green Pod	6–29–42	slightly overmature		2		0.21 ±0.00
Soybeans	Aoda	9–27–43	" "	64.7 ±0.8	6	0.23 –0.28	0.25 ±0.01
	Bansei	8–19–42		66.4 ±0.1	6	0.30 –0.34	0.32 ±0.01
	"	9– 3–43		66.0 ±0.3	3	0.24 –0.26	0.25 ±0.01
	Emperor	9–14–42	" "	63.3 ±0.1	6	0.21 –0.25	0.24 ±0.01
	"	9–28–43	" "	65.4 ±0.7	6	0.21 –0.24	0.22 ±0.01
	Funk Delicious	9–15–42		66.8 ±0.3	5	0.28 –0.32	0.30 ±0.02
	" "	9–15–43		69.6 ±0.9	4	0.32 –0.35	0.34 ±0.01
	Giant Green	8–21–41			5	0.26 –0.30	0.28 ±0.01
	" "	8–11–42		65.2 ±0.3	6	0.18 –0.28	0.24 ±0.02
	" "	8–11–43		73.0 ±0.4	6	0.30 –0.34	0.32 ±0.01
	Higan	9–14–42	" "		6	0.18 –0.22	0.20 ±0.01
	"	9–20–43		66.4 ±0.0	4	0.30 –0.32	0.31 ±0.01
	Illington	9– 1–42			6	0.20 –0.23	0.22 ±0.01
	"	9–13–43		65.8 ±0.2	6	0.28 –0.32	0.30 ±0.01
	Imperial	9– 8–42		68.4 ±0.1	6	0.25 –0.26	0.26 ±0.00
	"	9–28–43	" "	66.1 ±0.7	6	0.22 –0.23	0.22 ±0.00
	Jogun	8–26–42			6	0.28 –0.37	0.33 ±0.04
	"	9– 7–43		68.3 ±0.8	6	0.25 –0.27	0.26 ±0.01
Spinach	Blight Resistant Savoy	10–10–41		92.8 ±0.1	4	0.46 –0.73	0.62 ±0.10
	" " "	10–20–42			6	0.55 –0.72	0.64 ±0.04
	" " "	10–19–43		92.0 ±0.4	4	0.57 –0.73	0.68 ±0.05
	Bloomsdale Savoy	5–26–43		92.6 ±0.6	4	0.64 –0.77	0.70 ±0.03
	King of Denmark	5–21–42			6	0.43 –0.62	0.52 ±0.07
Squash	Early Prolific Straightneck	7–30–42			6	0.14 –0.18	0.16 ±0.01
Swiss chard	Lucullus	9–24–42	leaves only		4	0.25 –0.46	0.37 ±0.08
	"	9–24–42	stems "		4	0.056–0.087	0.074 ±0.010

* Stored in refrigerator overnight—determinations made 10/26/43.

Permanent Corps for Veterans Administration. H. R. 1661, introduced by Mrs. Rogers, proposes the establishment of a permanent Veterans Medical and Hospital Corps in the Veterans Administration. This corps will consist, it is contemplated, of a Medical Corps, a Nurse Corps, a Corps of Laboratory Technicians, a Corps of Physical Therapists and Occupational Therapists, a Corps of Pharmacists, a Corps of Dietitians, a Corps of Librarians and a Corps of Social Workers.

Civil Service Legislation. H. R. 1103, introduced by Mrs. Norton (referred to the Committee on Civil Service) "to provide for the classification of civilian positions with the District of Columbia and in the field services," further proposes that it be amended as follows: After the word "positions" line 2, paragraph 1, under subhead "Professional and scientific service" place a parenthesis and include in such parenthesis the following: "registered nurses and dietitians."

RETENTION OF B VITAMINS IN OATMEAL DURING COOKING[1]

J. M. COOPERMAN AND C. A. ELVEHJEM

From the Department of Biochemistry, College of Agriculture, University of Wisconsin, Madison

In a recent paper we reported the thiamin, riboflavin, niacin, and pantothenic acid content of uncooked oatmeal (1). Since the oatmeal used in the human diet is usually cooked before consumption, we wished to establish the retention of these vitamins during the regular cooking procedures.

Lane *et al.* (2) found no loss of vitamin B_1 when oatmeal was cooked under ordinary kitchen conditions. Slater and Rial (3) found less than 5 per cent of the vitamin B_1 destroyed when oatmeal was boiled 45 min. on an electric hot plate. Hanning (4) reported no significant loss in the vitamin B_1 content of oatmeal when cooked 1 hr. in a double boiler. We have cooked oatmeal under a variety of conditions and have determined the retention of thiamin, pantothenic acid, riboflavin, and niacin.

EXPERIMENTAL METHODS AND RESULTS

Packaged oatmeal, both the regular (large flake) and quick (small flake) types, was purchased from local grocery stores. Each sample was assayed for thiamin, riboflavin, pantothenic acid, and niacin. The cooking procedures emulated conditions in the ordinary kitchen—a pyrex double boiler, tap water, and a gas stove being used. Regular rolled oats was cooked 5, 20, and 30 min., respectively, using only the single boiler; and 15, 30, and 120 min., respectively, using the double boiler. Quick rolled oats, which is treated during processing so that it requires less cooking time, was cooked 2½, 5, and 15 min., respectively, in the single boiler; and 15, 30, 60, and 120 min., respectively, in the double boiler. In all cases the water was brought to boiling before adding the oats. The porridge was stirred frequently for the first 3 min. and at regular 5-min. intervals thereafter. All determinations described in this paper were run in duplicate.

Thiamin was determined by the Hennessy-Cerecedo thiochrome fluorescence method as modified by Hennessy (5). Samples equivalent to 2 gm. on the dry weight basis were digested with 75 cc. 0.1 N H_2SO_4 at 100° C. for 1 hr. and then cooled to below 50° C., after which a 5 per cent solution of clarase in 2.5 molar sodium acetate was added. The mixture was kept at 45 to 50° C. for 1 hr., then incubated for 12 hr. at 37° C. Trial runs showed that it was unnecessary to adsorb the filtered solution on a decalso column since similar results were obtained with and without the adsorption. We therefore oxidized an aliquot of the filtered digestion mixture directly with 3 cc. 15 per cent NaOH and 0.04 per cent $K_3Fe(CN)_6$, and the thiochrome formed was extracted with redistilled isobutanol. A Coleman photofluorometer was used to measure the fluorescence.

Pantothenic acid was determined by the microbiological method of Strong, Feeney, and Earle (6). Samples were prepared as follows: 75 cc. distilled water was added to a weight of sample equivalent to 0.5 gm. on the dry basis. This was neutralized to *p*H 7, autoclaved at 15 lb. pressure for 15 min., homogenized in the Waring Blendor, and finally diluted to the necessary volume.

Riboflavin was determined by the microbiological method of Snell and Strong (7) as modified by Strong and Carpenter (8). Samples were prepared as follows: 50 cc. 0.1N HCl was added to a weight of sample equivalent to 5 gm. on the dry basis, autoclaved at 15 lb. pressure for 15 min., cooled and then 3.3 cc. of a 2.5 molar sodium acetate solution was added. It was then adjusted to a volume of 100 cc., filtered through Whatman No. 40 filter paper and a 50 cc. aliquot of the clear filtrate adjusted to *p*H 6.8 to 7.0 and made up to 100 cc. This treatment was found sufficient to eliminate any interfering substances.

Niacin was determined by the microbiological method of Snell and Wright (9) as modified by Krehl *et al.* (10). Samples were prepared as follows: 25 cc. 1N NaOH was added to a weight of sample equivalent to 1 gm. on the dry basis, autoclaved at 15-lb. pressure for 15 min., neutralized and diluted to 200 cc.

TABLE 1

Changes in vitamin content of oatmeal during various cooking procedures

Calculated on total change

	THIAMIN	PANTOTHENIC ACID	RIBOFLAVIN	NIACIN
		mg./100 gm.		
"Quick" Oatmeal				
Uncooked	0.68	0.90	0.172	0.77
		*% loss**		
Cooked				
2½ min. (single boiler)	0	0	0	0
5 min. (single boiler)	0	0	+3	0
15 min. (single boiler)	1	1	+4	1
15 min. (double boiler)	1	0	+6	+5
30 min. (double boiler)	8	0	+6	+4
1 hr. (double boiler)	11	2	+5	+5
2 hr. (double boiler)	14	0	2	+1
Regular Oatmeal				
Uncooked	0.71	1.04	0.151	0.81
		*% loss**		
Cooked				
5 min. (single boiler)	0	0	0	0
20 min. (single boiler)	3	1	+2	+5
30 min. (single boiler)	7	0	+2	0
15 min. (double boiler)	2	2	+6	+1
30 min. (double boiler)	8	4	+2	+6
2 hr. (double boiler)	12	4	+4	+5

* The plus (+) sign indicates a *gain*, not a loss.

The loss of vitamins was first calculated on the basis of total change in vitamin content. The vitamin content of 1 gm. uncooked oatmeal was determined and these values were multiplied by the total amount of oatmeal to be cooked. After cooking, the porridge was mixed thoroughly so that a good aliquot was obtained, and the vitamin content of 1 gm. cooked oatmeal was determined. These values were multiplied by the total weight of cooked oatmeal. Thus, the total amount of each vitamin in the pot before and after cooking was known and the results were expressed as percentage loss (or gain).

Results for this series are shown in Table 1. It is clear that both types of rolled oats are affected similarly and that the loss is insignificant for all the vitamins during all cooking procedures up to 30 min. After 30 min. there appears to be a small loss of thiamin.

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In later experiments the loss of thiamin was calculated on a dry weight basis. Dry weight determinations on the uncooked oats were made by placing the cereal in a vacuum oven at 90° C. for 24 hr. The thiamin content was then expressed on a dry weight basis. After cooking, an aliquot of the cooked porridge was dried in a similar manner and the results again expressed on a dry weight basis. The percentage loss was then calculated from these data.

The results of these experiments appear in Table 2. It is obvious that there is a difference in the loss of thiamin upon cooking when calculated by two different methods, both of which are theoretically correct. It was thought at first that perhaps our dry weight procedures were not giving a true picture of the moisture content so we repeated them, using the Dean-Stark method which entails refluxing the material with xylol or toluol. However, no significant differences were found between the two methods.

TABLE 2

Comparison of thiamin loss during cooking of "quick" oatmeal as determined by the dry weight method and by assaying the total cooked product

LENGTH OF COOKING	DRY WEIGHT METHOD	ASSAYING TOTAL COOKED OATMEAL
	% loss	
15 min. (double boiler)	13	0
30 min. (double boiler)	18	2
1 hr. (double boiler)	18	5
2 hr. (double boiler)	20	8

TABLE 3

Comparison of results obtained by the 2 methods for determining loss of niacin by cooking "quick" oatmeal

LENGTH OF COOKING	DRY WEIGHT METHOD	TOTAL CHANGE METHOD
	% loss*	
15 min. (double boiler)	7	+5
2 hr. (double boiler)	7	+1

* The plus (+) sign indicates a gain.

Another possibility arose, namely, that some dextrinization of the starch in the oatmeal might have occurred upon cooking. The water thus absorbed in chemical combination would not be removed upon drying. The dry weights obtained under these conditions would be higher than the actual dry weights and this could account for the discrepancies noted. In order to determine if this actually happened, a weighed sample of uncooked oatmeal was dried in the oven, and an identical amount was cooked for 1 hr., then dried to determine if the dry weights would differ; they did to a small extent, indicating that dextrinization may play some part in accounting for the difference.

The dry weight method entails more weighings and the taking of more aliquots than the total loss method. To determine if this was a large factor in the differences noted by the two methods, 20 gm. oatmeal was weighed into an 800-cc. pyrex beaker and a proportional amount of water added. This was cooked for various lengths of time in a boiling water bath. The whole porridge was then digested with 0.1N H_2SO_4 and the total thiamin content determined. Results are shown in Table 2; it is evident that this "total change" method of calculation shows the least loss upon cooking. This is probably closest to the true value since many weighings and samplings are eliminated.

It was then decided to see if these results were peculiar to thiamin only. Two samples of oatmeal were cooked in double boilers, one for 15 min. and the other for 2 hr., after which the niacin content, calculated on the dry weight basis and on the total loss basis, was determined (*see* Table 3). As in the case of thiamin, a loss of niacin was shown when calculations were made on the dry weight basis and none when based on the total change method. Since niacin is undoubtedly stable, it appears that the latter method gives the more reliable results for both vitamins.

DISCUSSION

The results we have presented indicate the difficulty encountered in expressing results of vitamin losses during cooking. It is quite probable that these difficulties apply not only to oatmeal but to other food products. Nevertheless, published results are not standardized but are expressed in a variety of ways, making it difficult to evaluate and compare them. Since it is not practical and convenient to assay the entire cooked product it seems most logical that an aliquot of the cooked product be used and that the calculation be based on the total change method. Other factors such as the accuracy and reproducibility of the methods of vitamin analyses must also be considered. After evaluating these factors it will be easier to determine what is a significant loss. With our present methods for vitamin analyses perhaps a 5 per cent loss should not be considered significant.

SUMMARY

Packaged rolled oats of the regular (large flake) and quick (small flake) types were assayed for thiamin, pantothenic acid, riboflavin, and niacin. Samples of each type were cooked for various lengths of time and then assayed for the same nutrients. No significant losses were apparent under normal kitchen practices, that is, when the oatmeal was cooked for 30 min. or less.

Comparison of the results by the total change method with those by the dry weight method demonstrated the propriety of employing the total change method for determining the retention of vitamins during cooking.

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DIGESTIBILITY AND EFFECT ON LAXATION OF CRUDE FIBER AND CELLULOSE IN CERTAIN COMMON FOODS[1]

C. A. HOPPERT AND A. J. CLARK

From the Department of Chemistry, Michigan State College, East Lansing

THE relationship of the crude fiber value of foods to the processes of alimentation and elimination has been the subject of considerable study. It has been definitely established that the crude fiber of certain foods is effective in promoting laxation. Much credit is due such investigators as Cowgill, Rose, Williams, Fantus, and others, whose researches have helped to clarify our knowledge of these processes. It was with the purpose of obtaining a more complete understanding of the specific behavior of various fiber-containing foods that the present study was undertaken.

EXPERIMENTAL

A preliminary experiment conducted at Michigan State College to determine the relative effects on laxation of prepared bran and certain fruits and vegetables taken as supplements to a diet low in crude fiber, showed bran and cabbage to have the most consistent and favorable laxative effect, whereas certain vegetables and fruits gave variable and less pronounced effects. An attempt was made to obtain the coefficients of digestion with respect to crude fiber and cellulose in each of the supplementary foods, in order to determine their relation to laxation. However, due to limitations in the available analytical methods the data were inconsistent, and this phase of the experiment, therefore, was temporarily abandoned. Nevertheless, the experiment did serve as a basis for gaining experience and information for a more extensive study, the report of which follows.

As in previous studies, the experimental subjects were selected from a group of graduate assistants and undergraduates in the Department of Chemistry, Michigan State College. Prior physical examinations had shown them to be physiologically normal, and therefore suitable subjects.

Eight of the young men served as subjects for a comparative study of bran and various fruits and vegetables; a second group of 8 for the study of several cereal food products containing varying quantities of bran. Adequate dining facilities were provided by means of which the diets were administered under competent supervision. The basal diet, described in an earlier publication (1), was substantially free from crude fiber and consisted chiefly of foods of animal origin. It also included a limited quantity of bread made from a specially refined white flour containing less than 0.3 per cent crude fiber. To this basal diet, low in crude fiber, were added the various fiber-containing supplemental foods according to the following plan: A 4-day preliminary period (Thursday through Sunday) on the basal, fiber-low diet preceded the feeding of the first supplement in order to assure that the digestive tracts of the subjects would be free from any fiber-containing residues. On Monday, Tuesday, and Wednesday, the diet included the supplemental food, after which the subjects were returned to the basal diet for the remaining 4 days of each week. This regimen was repeated for each of the food supplements studied. The food supplements consisted of 3 and 6 oz. processed bran,[2] 21 oz. lettuce, 21 oz. tomatoes, 21 oz. cabbage, 21 oz. celery, 36 oz. oranges, 36 oz. apples, respectively, for the first group of subjects; and 3 oz. processed bran, 3 oz. 40 per cent bran flakes, and 3 oz. 60 per cent bran flakes for the second group, administered to each of the subjects during the 3-day supplemental periods.

TABLE 1

Coefficients of digestion of crude fiber and cellulose of certain fiber-containing foods

FOOD SUPPLEMENT (3 days)	CRUDE FIBER INTAKE	CELLULOSE INTAKE	WET WEIGHT OF STOOLS AVERAGE	DRY WEIGHT OF STOOLS AVERAGE	MOISTURE	ETHER EXTRACT AVERAGE	COEFFICIENTS OF DIGESTION	
							Crude fiber	Cellulose
	gm.	*gm.*	*gm.*	*gm.*	%	%	%	%
First group:								
3 oz. All-Bran	7.49	10.06	593	153	74.2	9.3	0	0
6 oz. All-Bran	14.57	18.90	747	170	77.2	8.5	5	6
21 oz. Lettuce	2.86	5.60	425	101	76.2	10.2	0	29
21 oz. Tomatoes	2.79	3.60	423	87	79.4	9.6	10	0
21 oz. Cabbage	4.07	8.84	547	118	78.4	9.1	14	42
21 oz. Celery	4.38	8.02	560	124	77.9	10.2	17	29
36 oz. Oranges	4.13	7.50	538	128	76.2	11.4	28	24
36 oz. Apples	9.44	10.38	481	114	76.3	10.9	71	57
Second group:								
3 oz. 40% Bran	3.63	5.79	644	161	75.0	8.8	0	0
3 oz. 60% Bran	4.53	7.05	567	134	76.4	9.9	0	0
3 oz. All-Bran	7.49	10.06	679	160	76.4	9.5	0	0

Stools were collected quantitatively in suitable depositories from Monday through Saturday, which would give reasonable assurance that all residues from the 3-day supplementary feeding were contained in the 6-day collection. The 6-day composite samples from each subject were weighed, dried on special low-temperature hot plates in a current of warm air to constant weight, and then ground in a Wiley mill. The finely ground dry samples were stored in air-tight containers and subsequently analyzed for ether extract, crude fiber, and cellulose. Similar analyses were made on the foods used as supplements. For the ether extract and crude fiber analyses, the methods of the A.O.A.C. (2) were employed; for cellulose, that of Crampton and Maynard (3).

The results obtained appear in Table 1, in which the mass of detailed data has been condensed, the figures representing average values of the 8 subjects involved in each series of experiments.

Observations on the ease of elimination as reported by the subjects throughout the experiment indicated that the

[1] This work was supported by a grant from the Kellogg Company, Battle Creek, Michigan. Received for publication April 28, 1944.

[2] The bran used throughout this experiment was a processed wheat bran (Kellogg's All-Bran).

most desirable laxative action was obtained from the bran and cabbage supplements. No significant laxative action was shown by lettuce and celery. The results given by the other supplemental foods varied from little or no effect as shown by tomatoes, to rather pronounced effect, as shown by 60 per cent bran flakes.

DISCUSSION

The exact manner in which the bulk-forming action of fiber-containing foods takes place is not as yet entirely clear. It is known that the presence of certain types of indigestible matter in the colon fosters the growth of bacteria. The gain in bulk of the bowel content resulting from the increased bacterial residue, moisture absorbed by the fibrous materials present, and the highly dispersed gases produced by bacterial action, give rise to a fecal mass of desirable size and consistency. Such a semisolid fecal mass not only gives the mucous membrane its normal stimulus, but is also the type of mass which is most easily moved forward by peristaltic action, thus giving satisfactory elimination. A more concentrated solid fecal mass, such as results from a diet containing insufficient crude fiber from a suitable source, lacks the stimulating effect and tends to accumulate in the haustra for long periods of time, resulting in constipation.

Hard, compact stools have been attributed by various investigators to excessive dehydration in the lower colon due to delayed movements. This hypothesis has been widely disseminated in the literature. However, recent studies (4, 5) indicate that this theory is untenable, since the moisture content of stools produced under widely varied dietary conditions shows no variations of sufficient magnitude to account for the severe constipation and irritation frequently associated with hard, compact stools.

Since there appears to be no direct correlation between moisture content of the stools and ease of elimination, it seems reasonable to assume that occluded gases present in the stools may help to make them soft and bulky and thus may play an important role in promoting easy laxation.

Although no attempt was made in this experiment to limit the intake of foods other than bread and supplements (the only sources of crude fiber), the values of the stool weights, as recorded in columns 4 and 5, Table 1, show a reasonable correlation to the type of supplement employed. It is of interest to note that both the wet and dry weights of stools resulting from the ingestion of cereal supplements are, in general, higher than those from the fruit and vegetable supplements. In fact, these differences are greater than may be accounted for by the greater intake of indigestible matter, and clearly indicate the bulk-forming properties of bran products. It may be further noted, however, that when the intake of bran was doubled, the stool weights (dry basis) were greater by only the approximate weight of indigestible material added. This observation suggests that, although bran definitely exhibits bulk-forming properties, there is no apparent advantage in going beyond an optimum intake.

With regard to the moisture content of the stools, it may be seen from column 6, Table 1, that the variations were very small. Moreover, it was found, contrary to expectation, that there was only slight, if any, relationship between the stool moisture content and ease of elimination, as shown by the following: In the first group, the average moisture content of the stools voided during the 3-oz. bran supplementary period was 74.2 per cent, compared to 77.9 per cent for the celery period. However, subjective observations on the ease of elimination indicated uniformly good response to the ingestion of prepared bran, whereas few of the subjects were aided by celery. On the other hand, during the cabbage period, the average stool moisture content was 78.4 per cent, and elimination easy. The average moisture content of the stools during the lettuce period was 76.2 per cent, and for the second group bran period 76.4 per cent, essentially identical, yet the ingestion of bran was accompanied by the restoration of normal elimination, whereas little or no benefit was derived from lettuce. It is thus apparent that within the limits of variations in stool moisture content as observed throughout this experiment, there was no definite correlation between the percentage moisture and the ease of elimination.

Column 7, Table 1, shows the average values for the percentage ether extract of the stools during the various periods. From these data, it appears that none of the supplements had any pronounced effect on the ether extract content of the stools. The slight variations noted are probably of little significance.

Because there have been occasional reports in the literature associating blood flecks in the stools with the ingestion of certain fibrous foods such as bran, frequent tests for blood were made on the stools throughout this experiment. The reports were not confirmed in our studies. As a matter of fact, in the experiment in which bran was fed at a level of 2 oz. daily to 6 subjects for a period of 30 weeks, there was no evidence of blood in the stools at any time. Positive tests, however, were frequently obtained at the end of the basal crude fiber-low periods when the subjects were constipated and strained during defecation. It appears, therefore, that constipation associated with hard, compact stools is frequently the cause of the appearance of blood flecks.

The coefficient of digestibility of a food material is defined as the average percentage of that material which is digested or disappears during passage through the digestive tract. The various supplemental foods used in these studies were analyzed for crude fiber and cellulose and the total intake of these constituents for each subject during each supplemental period was determined. In like manner, the total outputs of crude fiber and cellulose were determined by analysis of the 6-day composite stool samples. From these values, the coefficients of digestibility of crude fiber and cellulose from the various food supplements were calculated and appear in columns 8 and 9, Table 1.

It seems necessary at this point to call attention to the limitations in accuracy of the methods used in determining the crude fiber and cellulose content of the foods and stools. The most satisfactory analytical methods available at present still give somewhat variable results. This shortcoming must be reckoned with in the appraisal of the results, and the values appearing in Table 1 must be considered as relative or approximate, rather than absolute. For example, during the first bran supplement period, the analysis showed an intake of 7.49 gm. crude fiber, and an average output of 7.34 gm. If these were absolute values, there would be an indication of slight digestion, but since we know the values to be only approximate, we must assume that the digestion in this case was negligible. For this reason, the coefficients are given in round numbers. The points in question, however, may well be shown by these approximate values.

It is significant that little or no digestion is indicated for the crude fiber and cellulose of the cereal supplements. Vegetables such as cabbage and celery gave intermediate coefficients of digestion; fruits, comparatively high values. It may thus be stated that there is little or no loss in crude fiber and cellulose from cereal foods in the human digestive tract.

In attempting to correlate the results of this experiment, we find that the crude fiber and cellulose of bran products are substantially indigestible; nevertheless, bran products

are bulk-forming, and stimulate laxation. On the other hand, the crude fiber and cellulose of a vegetable such as celery undergo considerable digestion, yet this vegetable has little effect in promoting easy laxation. This might indicate that any loss of "roughage" by digestion leaves a smaller quantity to act as a bulk-forming agent with a resultant diminution in laxative action. This opinion has been expressed by Alvarez (6). In fact, some cases of constipation have been ascribed to an abnormally high digestibility of fibrous materials in certain individuals (7). On the other hand, cabbage showed only fair bulk-forming properties yet had an excellent effect in producing laxation, although its fiber to a considerable extent was digested. Thus a comparison of bran and cabbage suggests that laxative action is not necessarily diminished by slight digestion of the fiber fraction so long as other factors, capable of promoting laxation, are present. In the case of cabbage, it is very probable that laxation is due largely to the organic acids produced by bacterial decomposition of the indigestible residue (8).

It is of interest to refer to the report of Cowgill (7), establishing a daily intake of 90 mg. crude fiber per kilogram body weight as the minimal effective level to achieve good elimination. This would correspond to an intake of more than 2 oz. processed bran per day for an average adult. In the experiments carried out in this laboratory, prepared bran, without exception, was found to be effective at a 1 oz. per day level. In fact, the experiments on bran muffins, referred to previously, indicated positive laxation from bran intakes as low as 0.4 oz. per day, corresponding to between 15 and 20 mg. crude fiber per kilogram body weight. On the other hand, an intake of approximately twice this quantity of crude fiber from celery had little effect in alleviating the constipation usually observed with the basal diet. From these results it may be seen that fiber from different sources acts differently on passage through the human alimentary tract.

FIG. 1. *Orange*

For the purpose of investigating the variable digestion of fiber from various food sources, samples of crude fiber prepared from bran and several fruits were subjected to further study. In a search for staining techniques to differentiate the components of crude fiber which, according to Norman (9), are essentially plant cellulose and lignin, the method of Molisch (10) was found most satisfactory. The accompanying photomicrographs (Figures 1-3) show the results of staining crude fiber from several sources, and help to explain the variable digestibility of different fibrous materials. The dark fibers represent stained lignin material, the remaining unstained material being cellulose. The photographs of orange and grapefruit crude fiber show a distinct segregation of cellulose and lignin with only comparatively small amounts of the latter. Since it is well recognized that lignin is essentially immune to bacterial decomposition, this part of the fiber would likely remain intact on passage through the digestive tract. The remaining portion, essentially cellulose, is, however, amenable to bacterial breakdown, and consequently is found to disappear materially during digestion; in other words, it has a high coefficient of digestibility.

In the case of the bran crude fiber, no sharp differentiation between the cellulose and lignin could be demonstrated, all the material taking on a more or less definite stain. Although it is known that much of the lignin is removed by the alkaline digestion of the crude fiber procedure, this test indicates that lignin is so closely associated with cellulose in the original plant material that it imparts some of its own characteristics to the cellulose and results in the bran cellulose being resistant to bacterial decomposition and having a low coefficient of digestion. From these observations it is apparent that there are fundamental differences in the character of fiber from different sources, and that the close association of cellulose and lignin in cereal products is probably responsible for the greater stability of fiber from this source during its passage through the human digestive tract.

FIG. 2. *Grapefruit*

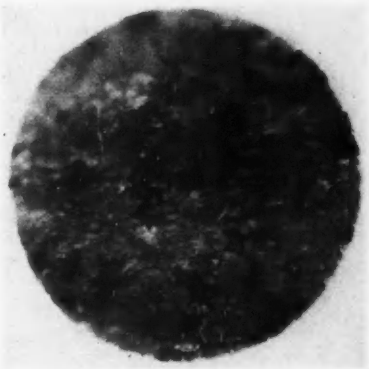

FIG. 3. *Bran*

From the foregoing, we may draw the following conclusions:

1. There are probably several factors responsible for the laxative action of fiber-containing foods.

2. Bulk-forming properties of food products are not always proportional to their crude fiber and cellulose values.

3. There is a certain optimum intake of bulk-forming foods of the bran class beyond which no added benefit is obtained as a result of an increased intake. In the case of prepared bran, this optimum intake is approximately 1 oz. per day, equivalent to 40 mg. crude fiber per kilogram body weight.

4. Stools of desirable size and consistency are produced by certain natural regulators, such as prepared bran and cabbage.

5. There is no direct correlation between moisture content and ease of elimination under normal conditions.

6. The ether extract content of the stools was substantially constant, regardless of the supplement used.

7. Diets deficient in fiber from a suitable source usually result in constipation, characterized by hard, compact stools, and irritation, frequently accompanied by the appearance of blood flecks.

8. Coefficients of digestibility of crude fiber and cellulose in foods from various sources are given. These range from low values for cereal products, through intermediate values for vegetables, to high values for fruits.

9. Dispersed gases in the stools probably play an important role in laxation.

10. The laxative qualities of foods should be evaluated on the basis of the physiological results produced by their ingestion; not on the basis only of their crude fiber values. Until this has been done with at least the common fiber-containing foods, there can be no logical basis for the establishing of a definite minimal daily intake for assuring normal laxation.

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Lead Poisoning

There are many references in medical literature to widely varied sources of contamination with lead of milk and other beverages including water, as well as foods. However, reports of cases of lead poisoning are relatively infrequent and are not always substantiated by acceptable evidence. No doubt the comparative rarity of such cases is due to the fact that these contaminations are usually small, and, except in the case of certain community sources of water supply, are spotty in their occurrence and so do not result in regularly repeated exposures to hazardous dosages. Milk and many other foods take up lead from containers that are soldered on the inside and from utensils coated inside with tin-lead alloys. The use of new skillets coated thinly with tin-lead alloys is a particularly fruitful source of contamination, but their coating of tin (containing lead) tends to be melted off soon, and the remainder becomes coated with a film which reduces the contact with the food. Lead glazed containers also may contaminate food and beverages that have solvent properties. Old pewter of high lead content is generally unsatisfactory as a container for beverages, especially those of high acid content, although here too the surface becomes coated and resists solution to a considerable degree if it is not cleaned frequently with abrasives. Much of the modern pewter has a low or negligible lead content, but unfortunately one cannot always be certain that this is the case.

The important consideration in this entire problem is the regular daily dosage of lead in the food and beverages from all sources. If this is much in excess of 0.5 mg. of lead over any considerable period of time (months) in the case of adults, it constitutes a potential hazard. In the case of children the daily dosage should be limited to a somewhat lower level. Poisoning does not occur in either adults or children from occasional ingestion of considerably larger amounts or from regular ingestion of amounts of the order of magnitude of 0.2 to 0.3 mg. a day in the food and drink. *From Queries and Minor Notes, J.A.M.A. 125: 684, 1944.*

Gastro-intestinal Ulcer in Wartime

Some gastroenterologists do not believe in a relation between the conditions created by war and an increase in the development of gastrointestinal ulcers and the aggravation of the symptoms. That this relation seems to exist is indicated by the increased frequency of the disease and the aggravation of symptoms in European countries. . . . Certain exogenic factors such as smoking and drinking either alcohol or coffee, which in peacetime are considered to be causal factors, are of secondary importance in wartime, during which the mental factors (nervous shock, worry from either material or moral losses) and the influence of these factors on the vagosympathetic balance are the causal factors of main importance.

Gastrointestinal ulcers in peacetime are more frequent in men than in women. However, it is pointed out that in the course of the present war the percentage of gastrointestinal ulcers has increased more in women than in men, probably because of the fact that the former are more nervous than the latter. The increase of working hours and the consequent overstrain may act indirectly on the nervous condition of the people. However, it has been found that the excess of physical work in itself does not exert a preponderant influence on the development of gastrointestinal ulcers, the incidence of which in accordance with the age of the patients has been almost invariable from 1939 to 1942. It is also held possible that hypoalimentation may have an unfavorable local effect on the gastrointestinal mucosa and aid the development of ulcers: the diminution of the number of meals, incomplete diets and the restricted consumption of fats and proteins accelerate evacuation of the stomach. A quicker evacuation of food from the stomach results in a prolonged period of fasting, it is pointed out, during which the gastric mucosa may be injured by hunger contractions on a fasting stomach with hypersecretion. It is also possible that the lowering of nutrition may be an indirect causal factor in ulcer by diminishing the local resistance of gastrointestinal tissues, it is believed.—*Foreign Letters, J.A.M.A. 127: 177, 1945.*

Editorial

ARMY DIETITIAN AWARDED BRONZE STAR[1]

A recent release from Headquarters, Communications Zone, European Theater of Operations, United States Army, announces that Cathryn R. VerMurlen was awarded the Bronze Star and promoted to captaincy in November 1944. At present she is the only dietitian overseas with that rank. The citation accompanying her decoration stated in part:

As dietitian of the Office of the Chief Quartermaster, Captain VerMurlen displayed exceptional talent, foresight and ingenuity in planning and developing the current "A" ration and special purpose menus required for this theater. In spite of temporary shortages of certain basic foodstuffs, with the added complication of feeding French, Moslem and Italian troops, Captain VerMurlen was able to keep pace with the recurring menu problems and to present workable solutions at the time they were needed.

Her perception, industry and outstanding ability to grasp and solve these problems of above average difficulty constituted performance of duty far beyond that considered superior performance by a company grade officer.

CAPT. CATHRYN R. VERMURLEN

A member of the American Dietetic Association, Captain VerMurlen, as a civilian, in 1936 was appointed dietitian at Hurley Hospital, Flint, Michigan, responsible for the feeding of some 400 people. Now, according to the release, she "decides the daily fare for nearly 4,000,000."

In order to plan her menus according to the food on hand, Captain VerMurlen takes stock of the foodstuffs in Army warehouses all over the continent before writing her monthly menus which she prepares six weeks in advance. Every item on that menu, she must be assured in advance, is either in the warehouses or on the way overseas. Master menus are then sent to mess officers of every unit in the European Theater of Operations and rations are drawn by them accordingly.

[1] *Editor's Note:* It is understood that Captain VerMurlen is the first Army dietitian to receive an American decoration, and the second to be so honored for her services in time of war. The late Marjorie Hulsizer Copher, who served with the Peter Bent Brigham Hospital Unit, attached to the B.E.F. and later the A.E.F. in France, 1917–19, was decorated by King George V of England, and the French Government.

In June 1942 Captain VerMurlen joined the University of Michigan Hospital group which arrived in England in October of that year to become the 298th General Hospital. She was then serving as dietitian in a civilian capacity, but was commissioned a second lieutenant in March 1943, and a first lieutenant a year later. In September 1943, she was transferred to the Office of Chief Quartermaster Subsistence Division, where she began her duties as menu-planner for the theater. In England, in addition to American troops, she planned menus for French and Moslem soldiers, as well as Irish labor under our jurisdiction. She devised special menus, heavy with steaks, roast beef, hams and chicken, for men in the marshalling areas prior to D-Day. A counterpart to those menus she now has in operation for troop trains carrying men to the front.

At her desk in a building on the outskirts of Paris, Captain VerMurlen now plans meals not only for American troops but for French civilians working for the United States Army, and Nazi prisoners of war. Meals for the latter, it is interesting to note, are planned almost entirely from captured enemy foods.

In the short paper immediately following, another member of the Association in service overseas, Lt. Ethel I. Boelts, previously assigned to the 298th General Hospital, gives an interesting account of her work as a Medical Department Dietitian. Lieutenant Boelts has achieved another distinction—mention in Ernie Pyle's latest book *Brave Men*. He, it appears, was the one who bestowed the name "Willow Run" on the consolidated mess she describes.

Current Comment

OPERATION OF CONSOLIDATED OFFICERS' MESS

LT. ETHEL I. BOELTS, M.D.D., A.U.S.

Assistant Mess Officer, Consolidated Officers' Mess, Central District, United Kingdom Base, Com Z, European Theater of Operations

The Consolidated Officers' Mess is a part of the Officers' Mess Section of Central District, United Kingdom Base. A Mess Director is in charge of the section. Military personnel of the mess consists of a Mess Officer, two Assistant Mess Officers, and a Dietitian. Six sergeants are in charge of various departments. The remainder of the staff is composed of civilian personnel supplied by the British Ministry of Labour and under the control of a civilian personnel manager. A civilian restaurant manager acts as liaison between the military and civilian staffs.

Located in the Great Ballroom of Grosvenor House, London, the mess has a floor space of 1200 square yards and is completely surrounded by a mezzanine with a deep balcony at one end which has been converted into a dining room for the use of officers of higher rank, with a seating capacity of 75. The ballroom floor has been converted into a cafeteria with 232 tables, each seating 4.

The mess is operated as a Type "B" Officers' Mess, following Field Menu "A", supplemented by rolls, fresh fruit and vegetables, and condiments, which may be purchased from British sources without coupons or points. Since there is considerable fluctuation in the number served at each of the three meals, food is requisitioned from the

Menu for Consolidated Officers' Mess, Monday, 25 December 1944

Menu Outline	Actual Menu	Amt.
Breakfast		
Fruit or Juice	Orange juice	42 lb.
Cooked Cereal	Semolina	30 lb.
Prepared Cereal	Assorted dry cereal	Four kinds
Meat	Bacon	120 lb.
Eggs	Fried eggs	1 ea.
Other Dish		
Bread	Toast	As needed
Spreads	Butter	18 lb.
	Peach jam	6 #10 cans
Beverage	Coffee	32 lb.
Dinner		
First Course	Tomato juice	180 #10 cans
Meat or Main Dish	Roast turkey	All in stores
Gravy or Sauce	Sage dressing, giblet gravy	
Potatoes or Starchy Vegetable	Sweet potatoes	All in stores
L. G. or Y. Vegetable	Peas	90 #10 cans
Other Dish	Cranberry sauce	30 lb.
Salad	Celery, radishes	As needed
Dessert	Cheese	114 lb.
	Mince pie	550
	Apples, oranges	1 ea.
Bread	Hot rolls	Homemade
	Bread	As needed
Spreads	Butter	60 lb.
Beverage	Coffee	64 lb.
	Tea	3 lb.
	Candy	16 15-lb. tins
Supper		
First Course	Vegetable soup	100 gal.
Meat or Main Dish	Assorted cold meat	Ham, pork, beef, turkey
Gravy or Sauce		
Potatoes or Starchy Vegetable	Lyonnaise potatoes	8 cwt.
L. G. or Y. Vegetable	Asparagus	66 #10 cans
Other Dish		
Salad	Lettuce	300 lb.
	Catsup dressing	
Dessert	Pineapple	66 #10 cans
	Cookies	British pack, plus others
Bread	Rolls	All in stores
	Bread	As needed
Spreads	Butter	40 lb.
	Apricot jam	6 #10 cans
Beverage	Coffee	48 lb.
	Cocoa	As needed

Quartermaster on a by-the-meal basis. In general, menus follow those set up by the Office of the Chief Quartermaster, variety being provided by salads and pastries. The same food is served in the generals' dining room as in the cafeteria, but these officers have table service.

Metal trays with one large, two small, and three medium-sized compartments are used. When soup is on the menu, crockery bowls are provided. The cafeteria counter is set up in the following manner: trays, potatoes or starchy foods, meat, gravy or sauce, vegetables, soup, bread, rolls, salad, butter and dessert. The cashiers' cages are at the end of each service. As the officers pass the cashier's cage, the lines of two cafeteria counters converge. Seaters direct the traffic to one section of the dining room where it is understood that every seat at each table is to be filled before another section is open for service. This enables the table clearers and setters to work in one section at a time preparing the tables for re-use. Beverages are brought to the table in quart coffeepots filled from vacuum urns which are moved about the room on trolleys. Coffee is served at breakfast, coffee and tea at dinner, and coffee and tea or cocoa at supper.

As the officers leave, two table clearers place cutlery and trays on a trolley, while two others clear the dishes in the same manner. As the trolleys are filled, a bus boy brings an empty trolley, and pushes the filled trolley of soiled dishes to the dishwashing station. Girls follow the clearers to wash the tables. One group of table setters resets the tables with cups or beakers for the beverage; another follows with cutlery, one girl being assigned to place each type of cutlery. A checker follows to see that each table is completely and neatly arranged. One girl follows to refill water pitchers, and in the same manner milk pitchers, sugar bowls, and jam dishes are refilled or replaced.

When service begins, salt and pepper, sugar, milk, water or lemonade, and jam or peanut butter are placed on each table and a knife, fork, dessert spoon, teaspoon, and two cups or beakers for each service. (Since the supply of dishes is limited, the beaker, an 8-oz. crockery glass, serves for either hot or cold drinks.)

At times the entire cafeteria dining room has been filled to its seating capacity as many as four times for one meal. In order to achieve the speed of service which this turnover demands, menus must be planned so that they require as few service points as possible in order not to slow down the movement of the food line. The counter is so constructed that there are about two steps between each service point. This keeps the line moving steadily, and gives the servers time to have a serving ready for each tray. Runners must be on the alert with a fresh supply of food as each counter dish is emptied, while cooks, in turn, must have food ready at all times for the runners. Since at peak capacity it is necessary to serve 25 to 30 officers per minute, and possible to serve 36 when service is easy, it is literally true that each second of time counts. A counter hand who is unable to serve quickly and with ease must be shifted to a point where the food is relatively easy to handle. Making change tends to slow down the movement of the line at the till. so

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officers are asked to have change ready when they reach the cashier's cage. When the same tables are used three or four times during the serving period of 2½ hr., it is obvious that at the busiest period tables must be used, cleared, and reset in less than 40 min. It is therefore necessary to keep dining room service operating smoothly and quickly. In like manner, the two dishwashing stations must keep the supply of trays, crockery, and cutlery ready for use at the counter and in the dining room.

The part of the operation just described is that which meets the public eye, and which has given the mess the name "Willow Run," by which it is popularly known. Very few have any idea of the problems behind the scenes. The main kitchen, just back of the serving counter, was constructed for use only as a serving kitchen in prewar days, and is somewhat cramped. However, it has been fairly well adapted to its present use. At the left of the kitchen is a dishwashing station where trays and cutlery are washed, and a pot-washing unit is also adjacent to the kitchen. To the right, off the kitchen and extending the full length of the cafeteria, with a passageway between, are the bakeshop and the vegetable preparation room, also space for bread and butter preparation, meat preparation, refrigerator, emergency stores and vegetable storage, with beverage room and the second dishwashing station adjoining the dining room. In addition there is a small can-opening room in which all cans are opened; this saves space, ensures better care of can-openers (a very scarce piece of equipment), and minimizes untidiness. The bulk of subsistence stores are kept in a residence across the street which has been converted into a warehouse. Since dry stores are issued from the depot twice a week, they must be moved over to the mess daily by hand truck.

Shortage of space and equipment makes it necessary to carry on food preparation throughout 24 hours of the day. Cooks and vegetable preparation staff work in three shifts. In general, other staff members work in two shifts during the day with the exception of a few who work a straight 8-hour shift during the day to cover the heaviest period of activity.

Menus are set up by the dietitian, with estimated amounts to be prepared and suggestions on food preparation and counter service in cases where there is diversion from set policies. This plan for menu making was set up early in the operation of the mess when it was found that civilian chefs had difficulty in determining amounts to be prepared. It has eliminated the possibility of running short of food, and reduced leftovers to a minimum. In the case of meat, fruit, and extra vegetables, the amount to be prepared is based on the quartermaster allowance for the number which the dietitian anticipates will be served. Sergeants in charge may increase or decrease the amount in emergencies. Amounts of potatoes, dry beans, rice, and other starchy foods are estimated on the basis of past experience.

The organization and policies for operation of the mess have profited from the ideas and suggestions of both the military and civilian staffs. In addition, the officer patrons have aided by placing helpful suggestions in a box provided for that purpose. However, that which to the casual visitor reflects a smooth-running, efficient organization, requires the constant and careful supervision of the military personnel in order that the high standard which has been set may be maintained.

TRAINING SCHOOL FOR INDUSTRIAL NUTRITIONISTS

In her opening remarks at the Training School for Industrial Nutritionists, Cornell University, November 28–30, 1944, Katharine W. Harris, head, Department of Institution Management, commented that "The operation of any food service establishment is a complicated job requiring knowledge, experience, and skill in many different areas, yet it is one which many people undertake without these requisites. To date industry has not used trained persons to any extent and management is quite often unaware of the intricacy of the job involved." Means whereby results convincing to management can be attained were outlined as follows: (1) simplify the menu in order to speed service, improve the quality and variety of food produced, and decrease costs; (2) rearrange food on the counter to speed service; (3) improve vegetable cookery; (4) make better sandwiches and salads; (5) improve dishwashing procedures; (6) assist with rationing problems.

Dr. L. A. Maynard, Nutrition Commissioner, New York State Emergency Food Commission, speaking on Policies and Objectives of an Industrial Feeding Program, made these points: "The WFA's industrial feeding program is essentially a promotional program. The Food Commission's program is designed to produce results. We want to go where we are needed and stay until we have accomplished something toward getting better food to more workers. These few plants can then become examples of what might be done elsewhere. Our program is set up on a statewide basis. It can't successfully operate on a county level because it requires special skills which the average nutritionist doesn't have. It can be correlated with the community education program, however. The widespread use of vitamin pills is a passing phase in industry. Future emphasis will be on food. Observations show that workers can't be depended upon to take vitamin tablets so that if vitamin concentrates are to be used, they must be put in the food the workers eat. The milk industry should merchandise their product as well as do the soft drink and candy merchants. A really good milk dispenser should be produced. In spite of favoring milk as the better food, we must realize that soft drinks have value as morale builders. Instead of trying to eliminate candy from factory canteens, we should try to get manufacturers to make more candy containing molasses, fruit, and nuts."

Ruth E. Cothran, Helen L. Diehl, Betsy Helburn, Grace O. Hunt, Ethel L. Marth, and Marcia Seelbach, Emergency Food Commission nutritionists who have been working in industry, mentioned the following as some of the problems they have encountered:

1. Failure of management to recognize the need for a food service within the plant.
2. Inability of management to understand the problems involved in laying out, equipping, and operating a lunchroom due to lack of training and experience in this field. (In several cases, the nutritionist's own lack of institution management training and/or operating experience, plus her unfamiliarity with industry, made management's lack of understanding of quantity food service problems even more acute.)
3. Management's dislike of the word nutrition, their prejudice toward nutritionists and dietitians, and their failure to distinguish between the two.
4. Management's reluctance to interfere with what they think of as the employee's freedom of choice in food selection as in other matters.
5. Management's concern with food costs, and the desire to feature foods giving a high margin of profit, such as soft drinks and candy.
6. Management's failure to recognize the need for an experienced industrial dietitian to operate the food service. (It is rather common to find an untrained person in charge, or a former hotel or club manager.)
7. Inexperienced lunchroom workers, and a management too pressed to train them in proper food handling.
8. Difficulty in changing the status quo in plants where the food service is managed by an untrained, elderly employee, having a long tenure of service.
9. Poorly planned menus and/or menus set up for heavy workers, ignoring the needs of men and women doing sedentary work.
10. A milk shortage, combined with poor dispensing arrangements and/or equipment.
11. Difficulty in keeping employee education in better food

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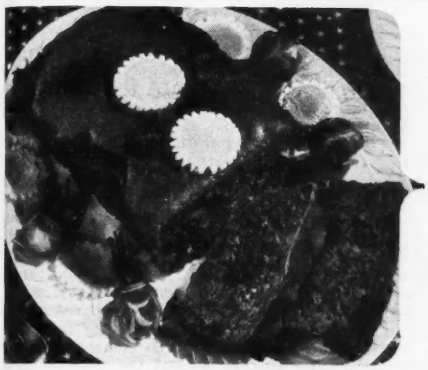

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(6 SERVINGS)

½ cup uncooked CREAM OF WHEAT
1 pound ground raw beef
1 egg, slightly beaten
3 tablespoons minced onion
¼ teaspoon sage or thyme
2 teaspoons prepared mustard
1 cup condensed tomato soup
1½ teaspoons salt
¼ teaspoon pepper
½ cup water

Combine Cream of Wheat, beef, egg and seasonings. Blend tomato soup and water. Reserve ½ cup and add remainder to the meat mixture. Blend lightly and pack into small, greased, loaf pan. Bake in moderate oven (350° F.) 50 minutes. Baste during baking with reserved ½ cup of tomato soup mixture.

New flavor, new texture, for dessert!

CREAM OF WHEAT APPLE PUDDING

(6 SERVINGS)

1½ cups cooked CREAM OF WHEAT
1½ cups scalded milk
3 eggs, beaten
¼ cup sugar
½ teaspoon vanilla
1 cup sliced apples
2 tablespoons sugar
⅛ teaspoon nutmeg
1 tablespoon butter

Combine cooked Cream of Wheat, scalded milk, beaten eggs and ¼ cup sugar. Add vanilla. Place sliced apples in a well greased baking dish (1½ quart). Pour Cream of Wheat mixture over apples. Combine nutmeg and 2 tablespoons sugar and sprinkle over the top. Dot with butter. Bake in moderately slow oven (350° F.) for 40 to 50 minutes. Serve hot or cold, with cream if desired.

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selection attuned to what the worker can secure in the plant lunchroom.

12. Failure of employees to understand many of the commonly used posters and food education exhibits.

In addition to these common problems, Miss Seelbach raised a number of specific questions based upon her experience in Buffalo, such as: "Should nutritionists work steadily in one plant until the plan is finished, or carry several plants and go less often? Should we ask to see the management's food cost records and should we pass judgment upon them? Should we ask permission to work alongside employees, provided we wear a hair net and uniform? How can we improve dishwashing and other sanitary practices in the kitchen and dining room? How can we improve the care and use of leftovers?"

In her discussion of planning food service for workers, Miss Harris emphasized that the dietitian should help management see what it might be best to do, and remember to keep the plan simple. The greatest need of all in a plant may be simply a place to eat lunches brought from home. You cannot do a good planning job alone, apart from the situation, or all at once. Even rolling food trucks need to be designed to suit the menu that is to be served. Some of the factors affecting kitchen planning, according to Miss Harris, are the menu; nearness to market and number of food deliveries; number of meals to be served per day; and the space and money available. Deck ovens, steamers, and steam-jacketed kettles should be used instead of much top-stove space. A dish machine is desirable when 200 or more meals are served, especially if the time between meal services is short.

In response to questions as to the desirable percentages of industrial lunchroom receipts which should be spent for food, labor, etc., Miss Harris gave the following comparative figures:

	Industrial cafeteria %		*School cafeteria* %	*Commercial restaurant* %	*Home economics cafeteria* %
Food	55.2		65.0	46.7	55.0
Labor	35.0		28.0	29.6	35.0
Rent	—		—	8.0	—
Repairs	—		.8	—	—
Laundry	1.48		1.5	1.85 Other	
Replacements	.6	paper and cleaning supplies	.7 light, fuel,	2.08 operating	7.8
Paper	.96		2.0 telephone,	4.5	
Insurance and taxes	1.95		— insurance	.7 expenses	
Miscellaneous	1.41		1.0	1.0	
Profit or surplus	2.56	surplus	1.3	5.6 surplus	2.2

During the workshop on floor planning, Miss Harris made these additional suggestions: (1) Use a $\frac{1}{4}$ in. = 1 ft. scale; (2) use drawing paper laid out in squares, set up to the same scale; (3) obtain or make a template of each essential piece of kitchen equipment cut to the same scale. Different colored templates for each area help one to distinguish pieces of equipment to go into different work units. In general, a cafeteria serving from 350 to 500 meals will need these work areas: vegetable preparation unit; cooking area (bakeshop is not necessary if bread and rolls are bought, and by careful planning the same oven can be used for baking and roasting); salad and sandwich unit; counter area for serving food; dishwashing unit (keep 60:40 ratio for soiled dish-deck to clean dish-deck); storage area; dining rooms; garbage shed or refrigerated garbage room; office; locker and washrooms.

Other excellent, specific suggestions concerning equipment were offered. With a simple, planned meal, a cafeteria can serve 12 to 15 people per minute at a single counter. Two short counters having steam-tables will, of course, double the number of guests who can be fed in the same length of time. An auxiliary counter where only soup, sandwiches, salads, desserts, and beverages are served is frequently used in the industrial cafeteria.

In selecting dining room furniture, avoid long tables and benches. Tables for four are more useful; these can be banked when necessary to seat 8 or 12. The ends of tables so banked should not be used because this blocks the aisles. Equipment is costly, therefore it is necessary to plan carefully and to buy only what is needed. The cost per seat for kitchen and dining room equipment is estimated to be about $14 to $15.

With regard to the present availability of food service equipment, Frank Curran, purchasing agent for S. Blickman & Company, said:

Electric ranges, toasters, motor-driven equipment, and refrigerators are scarce because motors and electric heating units are difficult to get, as are compressors and refrigerants.

Most items of kitchen equipment are available without priority, but if stainless steel is desired, WPB permission must be obtained. Aluminum is supposed to be plentiful, but none at present has been fabricated into equipment. Copper and brass are scarce and under strict control as to usage. Lumber is scarce. Gas ranges and toasters are available to a limited extent. Equipment such as ranges and mixers can be sold for civilian use only after government orders have been filled.

The manufacturers of refrigerated equipment should be able to produce a good refrigerated, coin-operated milk dispenser. But since refrigerated equipment requires compressors, horsepower motors, and refrigerants, all of which are critical, it will be difficult to obtain. Mobile carts are available if they do not include electric elements. They can be made of stainless steel, to order, and delivery takes from 8 to 10 weeks.

To obtain equipment for a war plant installation, it is necessary to list all items of equipment which are needed on WPB form 617. One should go to the local WPB first. If the request is referred to Washington, it has to go through the WFA which takes from 8 to 10 weeks. Items costing under $500 need not be cleared, but a request for the calendar quarter cannot exceed the cost of these items replaced during the same quarter in 1942.

PRINCIPLES OF PURCHASING[1]

FRANK J. BREUSCH

Purchasing Agent, Harper Hospital, Detroit

The principles of purchasing are essentially the same whether one is buying food or other commodities. Of first importance is the setting up of definite standards that will serve to meet the needs of the institution you represent. The next important step is to make certain that the goods you have purchased meet your standards.

Grades on meat, butter, eggs, milk, cream, and many other articles are well established. The greatest difficulty to combat at present is a tendency among some producers to upgrade products in order to obtain higher ceiling prices. This has applied particularly to butter and eggs. The grading and grade stamping of all beef, veal, lamb, and mutton carcasses and wholesale cuts are mandatory, according to OPA regulations, pork alone being exempt from this ruling. Carcasses and cuts are graded by official U. S. graders who stamp the USDA grade designations. On beef, for instance, these are Choice or AA grade, Good or A grade, Commercial or B grade, Utility or C grade, and Cutter and Canner. Some of us have become acutely aware of grade designations, particularly the C grade, in an effort to eke out our ration points.

The compulsory grading of canned goods has not yet been established, the canners having successfully fought off the efforts of the Government to bring this about. Some canners, however, have voluntarily adopted the A, B, C method of grading. Canned goods so labeled must meet the federal requirements, otherwise the producer is subject to penalties for mislabeling under the Food, Drug and Cosmetic Act. A very few canners have arranged for continuous inspection of their products by having a representative of the Agricultural Marketing Administration on

[1] Read before the Michigan Dietetic Association, November 4, 1944.

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While buying from reliable, established firms is a commendable method, nevertheless the more one knows about the commodity to be purchased, the less one has to rely on the integrity of the firm or the word of a salesman.

Some of the general principles advocated by the National Association of Purchasing Agents should be remembered in this connection:

1. We must consider the best interests of the hospital in all transactions.
2. We must be receptive to competent counsel from our associates.
3. We must buy without prejudice, seeking to obtain the maximum ultimate value for each dollar of expenditure.
4. We must subscribe to and work for honesty and truth in buying and selling, and denounce all forms and manifestations of commercial bribery.
5. We should accord a prompt and courteous reception, as far as conditions will permit, to all who call on legitimate business missions.
6. We must respect our obligations and also require that obligations to us and our hospitals be respected, consistent with good business practice.
7. We should counsel and assist fellow buyers in the performance of their duties whenever occasion permits.

It pays to buy standard-sized packages of commodities, if possible, so that a uniform yield may be obtained. However, in recent years we have had to compromise with whatever was procurable. Markets move fast and rules change rapidly and we must make quick decisions or miss the opportunity of securing merchandise. Articles that require an excess of labor in preparation should certainly be carefully considered before buying. A good example of this would be undersized apples, which while perhaps 50 cents per bushel cheaper, actually cost more in additional labor and wastage in peeling. Hospitals with mechanical potato-peelers will find that it pays to buy potatoes that do not require a great deal of hand work to trim. The fall potato that meets this requirement in Michigan is the Upper Peninsular Green Mountain variety, which comes nearest to the Maine Green Mountain, considered ideal.

Some of the larger hospitals consider the "bid" method the best and only way to buy. However, during the last few years when merchandise has been exceptionally hard to get, some of those buying under the bid system have not fared so well. At best, it does not pay to get prices from more than four or five vendors. Do not spread your buying too widely. It requires more manpower, uses up scarce gasoline and tires, and takes extra time in your receiving department, as well as requiring more work in the purchasing records and accounts payable department. At Harper Hospital we prefer to buy locally except where lower prices may be obtained out of town. Two dealers are usually sufficient to supply our fresh fruits and vegetables. Competitive prices are telephoned in every day from both dealers. Usually the orders are given to the one whose prices are lowest, except when there is a marked difference in quality.

Before ceiling prices were set on meats, quotations were obtained from three dealers each Monday and the prices so quoted held until the next Monday. Two of the dealers represent local branches of large Chicago packers and prices are almost exactly the same now. One of the dealers is patronized particularly for special service and cuts that the packers are unable to or will not supply. By getting competitive prices from these three sources many dollars have been saved. Meats are usually procured in the largest piece obtainable, such as a round, sirloin strip, etc., and cut into uniform portions by our own meat cutter. We always purchased beef by carcass or hindquarter until the Government compelled dealers to cut the meat into smaller pieces.

The WFA Chicago branch issues a Daily Market Report, quoting prices and showing availability of butter, cheese, eggs and poultry, and the WFA Detroit office publishes a Daily Fruit and Vegetable Report that is excellent in this particular field. The New York *Journal of Commerce*, published daily, carries an excellent page on foods, reports crop conditions and percentages of this year's canned goods pack compared with previous years, long before your salesman has this information. The McGill Commodity Index, as published in *Hospitals*, gives dependable market predictions. The monthly surveys, as published in the local papers, are also accurate forecasts.

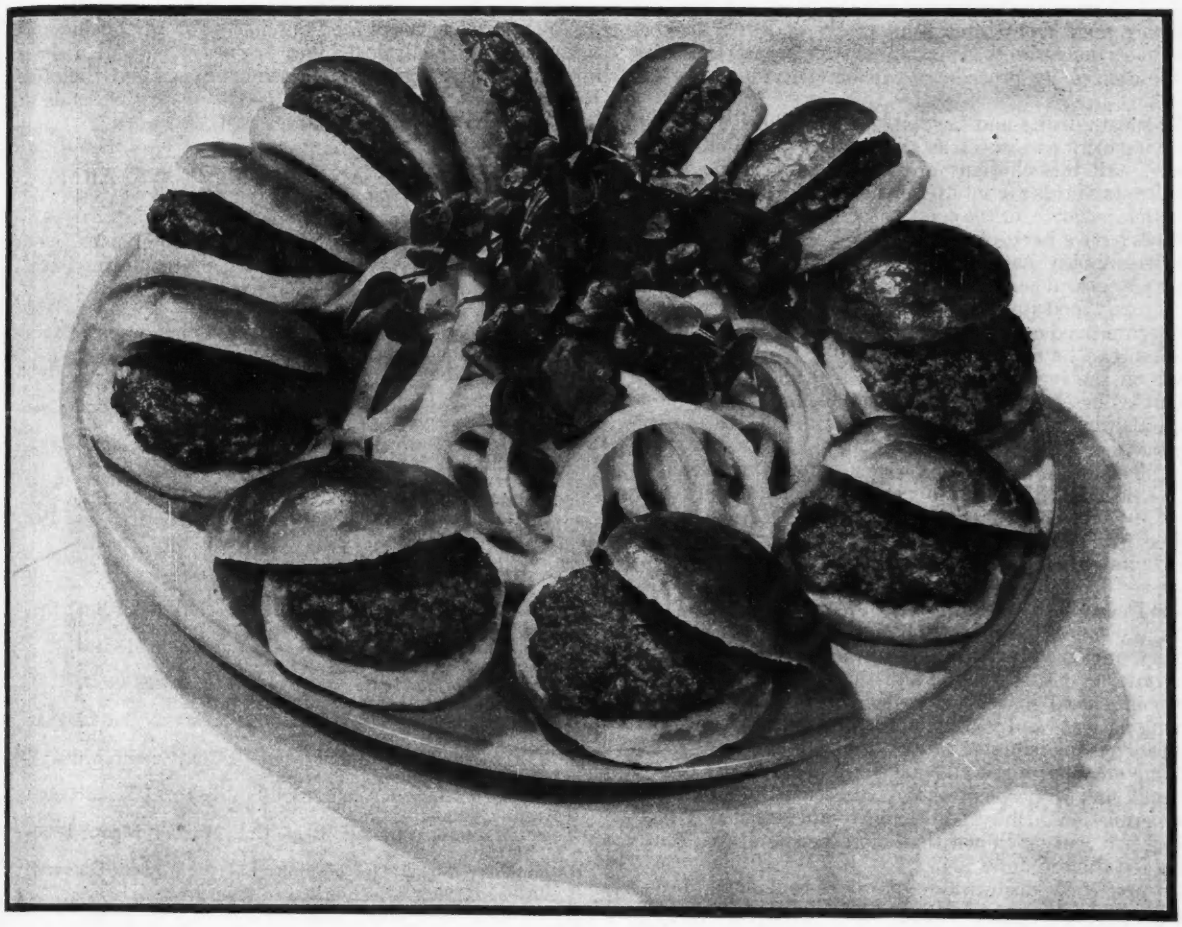
At Harper Hospital we use the Remington-Rand Kardex system to record our purchases of food stores. All fresh fruits, vegetables and meats, except canned, are charged directly to the kitchen food account. All goods purchased for the storeroom are charged and all withdrawals from stores by requisition are credited on individual cards for each article. Thus, we have a perpetual inventory. A physical inventory on the last day of every month is used to check the balance on each card. A minimum quantity is noted on each card and when the inventory balance reaches that figure, a note is made so that the purchasing agent can obtain a new supply. This minimum quantity varies with each article, depending on its availability, the facilities for storing the article, the cost, and point value. On some articles a 2-week minimum might be considered adequate, while for others a year's supply might not be considered excessive. This notice on the card makes it unnecessary to depend on the storeroom clerk for notification of low stock. It might be mentioned in this connection that a purchasing and stockroom personnel of 1 person to each 66 to 80 beds is not considered excessive. In hospitals where a perpetual inventory is considered unnecessary, a memorandum record of the purchases of each article for the past 5 years is absolutely essential in order to buy intelligently.

We have found it wise to contract for frozen fruits, vegetables, and poultry a year in advance. We have also found it very convenient to have a supply of good beef in public storage as a standby. Last year we put turkeys away in public cold storage and this year we were able to serve them when neither fresh nor frozen were procurable. Frozen foods are now enjoying tremendous popularity and their use is limited only by the public freezing space available. Therefore, if you are contemplating building, include refrigerator facilities for at least a week's supply of meat and fruits. In this way you will be able to store the various kinds of meats when they are available. Be sure to include a deep-freeze chamber of adequate capacity for use when you are unable to use all the meat you have on hand. Deep freezing will not improve the quality of your meat, but will keep it from spoiling. Many people now prejudiced against frozen meats will find it necessary to revise their ideas in the future. A thermometer, particularly a recording thermometer, will assist in keeping refrigerators at the proper temperature required for the various food items.

At Harper Hospital the administrative dietitian gives the purchasing agent a requisition on Monday to cover meat requirements for the entire week. Orders are placed that day, which gives the vendors time to assemble the various items for their proper delivery date. Usually they know on Monday what they are apt to have during the week.

Orders for fruits and vegetables are placed on the afternoon preceding the dates of delivery. No orders are given on Saturday for Monday delivery. Experience has taught us that fewer farmers come to market that day and that wholesalers start out with higher prices on Monday.

We try to assist vendors in limiting deliveries. While we



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purchase meat from three vendors, we endeavor to keep each one's deliveries to two or three trips per week. Some of these economy procedures will be continued after the war.

All meats, fruits and vegetables are weighed in by the receiving clerk as a check on the amount stated on the invoices. All bushel items are weighed, even though no definite standards are set up for them. We find that when an article is scarce, or the competitive price is too low, some vendors have a habit of making 5 bushels out of 4, particularly vegetables that may be rearranged to make a satisfactory appearance.

Prepared food items are not purchased except where it has been proved conclusively that they are cheaper or better than can be made in the hospital. We have a closer check on the ingredients of products which we make or assemble ourselves. This would not apply to the smaller hospitals where labor, space, or time would not permit this practice.

In figuring raw food costs at our hospital it was interesting to note that 1940 costs were 6 per cent higher than 1939; 1941, 14 per cent higher than 1940; 1942, 14 per cent higher than 1941; and 1943, 5 per cent higher than 1942.

Hospitals should be able to procure sufficient meat and processed food points to assure a proper diet for patients. While December 1942 was used as the base month and food point allowances were largely based on the figures reported for that month, provision is made in Section 11.6 of the food order to ensure relief, if a distinction is made between the points used in serving personnel and those used in serving patients and you are able to prove that your point allowance is inadequate.

Some creameries are allowing hospitals 100 per cent of the milk and 75 per cent of the cream used in June 1943, but permission to buy additional quantities may be obtained if it can be shown that more people are currently being fed than in June 1943.

In procuring dishwashing powders and soap, buy a standard, uniform product from a reliable source. One with a penetrating oil or "wetting out" agent is especially good. A few companies make a practice of taking some of the basic detergents or alkalies, adding a little coloring, a pleasant odor, and charging a fancy price for them.

Large aluminum cooking kettles are now available and smaller ware and trays will be later. Small kitchenware such as egg-beaters, egg-turners, strainers, and paring knives are making their appearance again. Stainless steel flatware is available, also a better grade of nickel-plated ware.

Many dietitians take a great deal of interest in the pattern of the chinaware used, especially for private patients. It pays to standardize on this item, buying designs and shapes that may be procured from several sources. An adequate supply has been difficult to obtain recently, since 3 to 12 months usually elapse before an order is filled. Restrict the number of patterns used, thus saving space and money. One large hospital has restricted the number from six to four, with three patterns as an ultimate goal; we have reduced the number from four patterns to two. It is well to have dishes on order from 3 to 6 months ahead, according to some authorities. Deliveries have recently been expedited but this may not continue if the Government decides to augment its supplies. Paper goods continue to be scarce. I doubt if paper dishes in quantities could be procured, in the event of a shortage of chinaware.

Textiles of all kinds are becoming more and more difficult to obtain. Even a cessation of the war in Europe will probably not improve this situation very soon. Materials for towels, colored uniforms, aprons, are very scarce indeed.

To make a success of food purchasing or any business or profession, an analytical mind is necessary, and a deep interest in figures and comparisons is exceedingly helpful. Research work in this direction usually pays dividends in better food, purchased at a lower cost.

APPOINTMENTS AND PROMOTIONS, ARMY MEDICAL DEPARTMENT DIETITIANS

The following Medical Department Dietitians were appointed in the Army of the United States during January 1945:

Baggan, Mary Victoria: Rhode Island State Col.; Women's Educational and Industrial Union, Boston.
Ballard, Helen Aloha: Miami Univ., Ohio; Univ. of Maryland Hosp.
Barbee, Margaret Pauline: Woman's Col. of Univ. of North Carolina; Brooke G. H., Ft. Sam Houston.
Bowdish, Jeanne Ruth: Iowa State Col.; Johns Hopkins Hosp.
Brady, Pauline Esther: Univ. of Idaho; Cincinnati G. H.
Burnstad, Iva Alice: Univ. of Wyoming; Borden G. H.
Cohill, Ruth Broadbent: St. Joseph's Col.; Lovell G. H.
Douglass, Elizabeth Ann: Col. of William & Mary; Peter Bent Brigham Hosp.
Eakle, Dorothy Hunter: North Texas State Teachers Col.; Brooke G. H.
Emerson, Edith Hildegard: Nasson Col.; Brooke G. H.
Errico, Leonora Ruth: Rhode Island State Col.; Peter Bent Brigham Hosp.
Hopkins, Bernice Margaret: Cornell Univ.; Walter Reed G. H.
Hopkins, Edith Eugenia: Russell Sage Col.; Brooke G. H.
Johnston, Catherine Moore: Col. of Saint Elizabeth, N. J.
Koskela, Violet Sylvia: Massachusetts State Col.
Mauriello, Catherine Victoria: State Teachers Col., Framingham, Mass.
Moran, Elizabeth Thomasine: Marywood Col., Scranton, Pa.; St. Mary's Hosp., Rochester, Minn.
Morris, Thelma Lavone: San Jose State Col.; Alameda County Hosp., Oakland, Calif.
O'Toole, Margaret Adrienne: Regis Col., Weston, Mass.; Brooke G. H.
Preston, Mary Rachel: Georgia State Col. for Women; University Hosp., Cleveland.
Robinson, Jeanne Dora: Univ. of Iowa; Ancker Hosp., St. Paul.
Schaeffer, Helen Louise: Carnegie Inst. of Tech.; R. H., Ft. Bragg.
Thompson, Nelle Elizabeth: Iowa State Col.; Madigan G. H.
Ullman, Phyllis Marie: Clarke Col.; Cincinnati G. H.
Westcott, Wauneta Barbara: Univ. of Nebraska; Colorado G. H., and R. H., Ft. Leonard Wood.

The following Medical Department Dietitians were promoted during the month of January 1945. They are on duty in Army hospitals in this country and overseas.

Second Lieutenants to First Lieutenants

Arzt, Elizabeth, R-751
Barker, Doris Myrl, R-1299
Bartlett, Marian, R-1055
Boswell, Helen Frances, R-50
Carlson, Christie Livedalen, R-849
Cisne, Ida, R-493
Cosner, Lillian Belle, R-1018
Craigie, Hazel Barbara, R-904
Deacon, Ruth Gwendolyn, R-410
Dershimer, Evelyn, R-449
Ensign, Donna Marie, R-993
Frederick, Mildred Lucille, R-1182
Harper, Florence Allen, R-724
Harrison, Estelle Eames, R-620
Killinger, Wilma Rita, R-417
Malec, Slava, R-140
Owens, Velma Portia, R-149
Richardson, Velma Lee, R-68
Schroeder, Virginia Marie, R-842
Thompson, Willa May, R-843
Weagly, Josephine Estelle, R-869

First Lieutenants to Captains

Conway, Mary Rose, R-124
Lowe, Donna Sue, R-492

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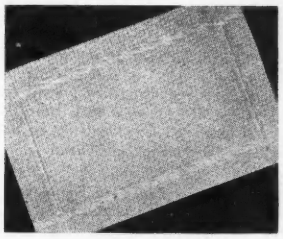

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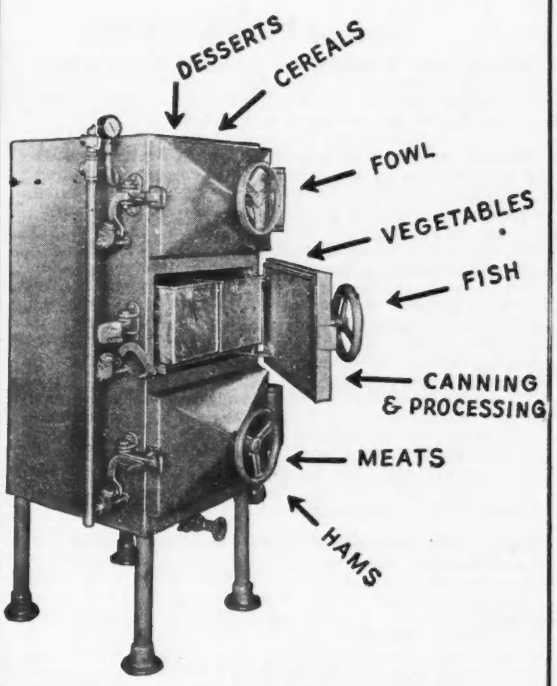

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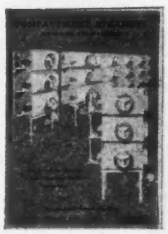

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Book Reviews

The Chemistry and Technology of Food and Food Products. Vol. II. Morris B. Jacobs, New York City Department of Health, Editor. New York: Interscience Publishers, Inc., 1944. Cloth. Pp. 890. Price $10.50; $19 per set of two volumes.

This is the concluding volume of a comprehensive work, the first volume of which was reviewed in this JOURNAL for September 1944. The same comments as to the excellent coverage, organization, and value of the book to dietitians apply to the present volume, which continues with Unit Operations and Processes (grading, separation, blending, heat treatment, dehydration, etc.); Sanitary and Quality Control, with sections on supervision by government agencies, food grading, food machines, washing, detergency, sanitation, and plant housekeeping, insect control, rodent control (much of which has general application); Preservation, including excellent sections on dehydration, freezing, canning, food preservation by use of micro-organisms and chemical preservatives, and packaging, all by well-known authorities; and Production, which covers the manufacturing processes in production of cereal products, bread and bakery products, sugars and syrups, confectionery and cacao products, fruit juices and preserves, milk and milk products, meat and meat products, oils, fats, nonalcoholic and alcoholic beverages.

A point not mentioned in the previous review is that the material is completely and carefully indexed, a most important consideration in a work of this type.

The Amino Acid Composition of Proteins and Foods. Analytical Methods and Results. By Richard J. Block, Ph.D., Associate in the Department of Physiology and Biochemistry, New York Medical College, and Diana Bolling, B.S. Springfield, Ill.: Charles C Thomas, 1945. Cloth. Pp. 396. Price $6.50.

As the title and subtitle indicate, this is a monograph on methods and results of amino acid determinations. Where possible several procedures are given for the estimation of each amino acid. Since the relative value of the different proteins, whether animal or vegetable, is dependent upon their content of these amino acids, the worth and timeliness of the book under review are readily apparent. Such information permits one to combine different proteins which are mutually supplementary in providing a nutritionally "whole" quota of protein, with due consideration of the factors of cost and availability.

Included are many of the analytical values from the literature and some hitherto unpublished results of the authors' experiments. While the number of foodstuffs so analyzed is limited, the data which are available have been summarized in a readily usable form. For instance, one such summary gives the approximate percentage of amino acids in certain wheat proteins, including that in bread and in several popular cereal breakfast foods marketed under trade names.

Nutrition With Sense. By Eleanora Sense. New York: M. Barrows and Company, Inc., 1944. Cloth. Illustrated by the author. Pp. 222. Price $2.

When the author of the widely accepted *America's Nutrition Primer* came to revise the book she decided that a complete rewrite job was necessary, because of the more universal interest in nutrition as such and the advancements made in the science and art of its application. The result is *Nutrition With Sense*, a popular exposition of the basic rules of nutrition, set forth in a manner which should make them easy to follow. A series of charts show, by means of symbols to denote specific quantities, the comparative value of foods as sources of nutrients. The chapters on nutrition economics and nutrition in agriculture present entirely new subjects introduced in the present revision. Chapters on buying and general principles of cooking precede the menus and recipes for everyday family meals which comprise almost half the book. The latter are described as "recipes and menus for joyful eating" which typifies the author's evident conviction that the public should be persuaded that it is just as much fun to eat the correct food as the wrong food, assuming, of course, that the principles of nutrition and the components of a good diet are thoroughly understood.

Noteworthy features, especially in a book of this type, are the introductory fillips to the reader's quest for knowledge in the form of such queries as: What is nutrition? Has nutrition been known for a long time? Why do fats satisfy an appetite? What is meant by the demand and supply of food? Is there any difference between frozen, canned or glassed, and dehydrated vegetables? Why is it a good rule to include some protein at every meal? All these, aptly answered, along with many "sensible nutrition menus and recipes," cooking rules and tips on buying, interspersed with the author's cheerful illustrations, make up what may be properly and paronomastically predesignated as *Nutrition With Sense*.

Industrial Nutrition. By Ludwig Teleky, M.D. Chicago: Industrial Commentaries, 1944. Paperboard. Pp. 64. Price $2.

This book, designated as No. 1, Vol. 2 of a series on industrial problems, is presumably addressed to "management." It attempts to tell the whole story of nutrition, in less than half the space of the book and, as with countless other such attempts, one wonders just what sort of mental picture the discussions of food needs in grams per kilogram, calories per 100 gm., etc. bring to the mind of the uninitiated reader. We do not question the value of the general impressions which may be gained in spite of this.

The second half of the book, devoted to practical applications, seems more valuable. Problems of special interest to factory managers are treated, including proper management of lunchrooms, canteens, etc., and some excellent suggestions are offered.

We find many inconsistencies in spelling and a few typographical errors, also some inaccuracies that would not pass in a book for a more scientifically-minded audience. We admit that we are probably conditioned by the many very carefully prepared and edited books on nutrition, not to mention the fine brochures distributed by commercial concerns. But no doubt we can safely assume that the book under review will serve the purpose for which it was intended, for in spite of all the publicity given to the importance of industrial feeding, there are, as the author points out, those managers who "have not yet recognized to what extent the worker's efficiency depends upon his sense of well being" and these may conceivably be reached through the medium of a book addressed especially to them but not forced upon them.

Kitchens Near and Far. By Herman Smith. Illustrated by Eleanora Sense. New York: M. Barrows and Company, Inc., 1944. Cloth. Pp. 276. Price $2.

It is such books as this, and the author's *Stina, the Story of a Cook*, that should serve to lift the possible blight of a too frostily scientific attitude toward cookery in America. If cookery is an art as well as a science, then a too mechanistic approach, with little encouragement of the individual sense of artistry, has its certain disadvantages. Food under such conditions can be ground out like the "music" from a player piano, monotonously and technically correct, but lifeless—mere punctuated sound, without special meaning.

And so we welcome Mr. Smith's book, with its unusual and enticing recipes, not always conforming to accepted, standardized procedure, but accompanied by his poetic introductory prose which serves to demonstrate anew that the arts are inseparable—that the true artist, whether his medium be words, pigments, music, or foods, is motivated by something more than a studied, sometimes painfully acquired technique.

Obviously the author and his inspiration, Stina, the cook, looked on food, a savory pot roast of beef, for instance, not for its quota of essential amino acids, but as something whose very aroma "would tempt our pastor to make his grace a short one." The sliced onions interspersed in the well-browned pork chops would have the color of ripe wheat; the cabbage, cooked a tender green, served as a Della Robbia wreath around the corned beef; the cauliflower, cooked as only the true artist cooks it, to the tenderly crisp stage, when baptized with parsley butter and attended by twin bowls of browned and buttered crumbs and grated cheese was (and still is) a noble dish. The fragile flavor of Brussels sprouts and the delicate color, too, were preserved by cooking only to the slightly crisp stage, at which, with added butter and seasoning, only freshly boiled chestnuts, or sautéed mushrooms, could possibly enhance their near perfection.

But this is more than a commentary on cooking in America; as the title indicates, the author takes us on a gustatory tour of Chinese, Hawaiian, East Indian, Spanish and Italian kitchens, with interest and profit to all devotees of good food.

Nurse Please! Pictured by Jean McConnell. Philadelphia: J. B. Lippincott Company, 1944. Paper, circla-bound. Price $1.

A series of amusing cartoons depicting the progress of a student nurse from admission to the hospital until her graduation, suitable as a gift to a nurse who is at either end of the ladder.

Vitamins in Quantity Cookery. By Alice Easton. Stamford, Conn.: The Dahls, 1944. Paper. Pp. 72. Price 50 cents.

The purpose of this booklet, as stated in the Foreword, is to "stress methods of providing the essential vitamins from natural food sources in the daily diet and to offer practical suggestions for food preparation which will save these natural vitamins and minerals. . . ." The author acknowledges the assistance of Dr. Estelle E. Hawley, who read the manuscript.

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Current Literature

Contributed by Helen Baughman, Janet Engebretsen, and Hilda McEwen, Dietary Department, Johns Hopkins Hospital, Baltimore; Quindara Oliver Dodge, School of Home Economics, Simmons College, and Women's Educational and Industrial Union, Boston; Margaret Shatswell Price; and the Journal Staff.

AMERICAN JOURNAL OF PHYSIOLOGY

Vol. 142, December 1944

*Spontaneous activity in relation to diet in the albino rat. E. A. Smith and R. M. Conger.—p. 663.

*Mechanism of the effect of hyperthyroidism on cardiac glycogen. L. E. Moses.—p. 686.

*Hemoglobin concentrations, red cell counts and erythrocyte volumes of college women of the north central states. M. A. Ohlson, D. Cederquist, E. G. Donelson, R. M. Leverton, G. K. Lewis, W. A. Himwich and M. S. Reynolds.—p. 727.

Activity in Relation to Diet. Activity records for 54 rats during about $\frac{1}{12}$ of their life-span indicate that as much as 56% of the calorific value of the food may come from fat and spontaneous activity be maintained at a normal level, and that 72% of the calories in the form of fat depresses activity a little, and that 50% as animal protein induces a marked decrease in activity.

Hyperthyroidism and Cardiac Glycogen. It is concluded that the decrease in heart glycogen by hyperthyroidism is not due to any specific "toxic" influence of the thyroid hormone. The suggestion is tentatively offered that the glycogenolytic action is exerted through a relative ischemia caused directly or indirectly by the increased cardiac activity.

Erythrocyte Characteristics in Young Women. This study would indicate that normal standards for hemoglobin concentration, red cell counts, and cell volumes must be interpreted as a range of values which is wider than the ranges recorded by earlier studies.

ANNALS OF INTERNAL MEDICINE

Vol. 21, December 1944

*A high fluid intake in the management of edema, especially cardiac edema. Clinical observations and data. F. R. Schemm.—p. 937.

*The use of benzedrine sulfate in obesity. F. K. Albrecht.—p. 983.

High Fluid Intake. In an eight-year study of fluid intake in edematous patients, patients with gross edema improved remarkably on a high fluid intake; of 369 cases, 94% cleared entirely. Besides a high fluid intake of as much as one liter per hour, these patients were on a neutral to acid ash diet, reduced sodium and salt, and added acid medication. Mild cardiacs who had been on diets high in basic ash or salted foods cleared 15 to 20 lb. edema without the use of acid drugs. Mortality statistics can not be published for several years, but prognosis for cardiacs treated on high fluids is good.

Benzedrine and Obesity. Benzedrine sulfate is being used as an adjunct to reduce obese people because it helps individuals control the desire to eat. It is not advocated in place of diet, since weight lost by using benzedrine is generally only temporary, but physicians have found it to be a useful aid. This drug delays rate of stomach evacuation; it relaxes the esophageal spasm and stomach muscle. Whatever action benzedrine has on the intestine is still uncertain. The patients studied never developed a desire to continue the drug; it seemed to have no ill effects.

ARCHIVES OF PEDIATRICS

Vol. 61, December 1944

*Evaporated milk in infant feeding. An evaluation with and without added carbohydrate. H. R. Litchfield.—p. 617.

Infant Feeding. In a comprehensive analysis of a series of infant feeding cases the author recommends that newborn infants and those in early infancy be fed milk formulas with additional carbohydrates and vitamin B_1 for optimal growth and development.

BRITISH MEDICAL JOURNAL

No. 4374, November 4, 1944

*Human-milk intoxication due to B_1 avitaminosis. L. Fehily.—p. 590.

Prenatal diet and the infant. Editorial.—p. 603.

No. 4375, November 11, 1944

Acute perforated peptic ulcer. C. F. W. Illingworth, L. D. W. Scott and R. A. Jamieson.—p. 617.

The problem of ageing. Editorial.—p. 634.

*Nutrition in Japanese internment camps. Editorial.—p. 635.

No. 4376, November 18, 1944

*Studies on hepatic dysfunction—the value of sulphur-containing amino-acids and casein digest in the prevention of post-arsphenamine jaundice. J. Beattie and J. Marshall.—p. 651.

*Acute perforated peptic ulcer—frequency and incidence in the west of Scotland. C. F. W. Illingworth, L. D. W. Scott and R. A. Jamieson.—p. 655.

*The rise in peptic ulcer. Editorial.—p. 665.

*Food Yeast. Editorial.—p. 668.

No. 4378, December 2, 1944

'Growth" and the diabetogenic action of anterior pituitary preparations. F. G. Young.—p. 715.

*Artificial induction of lactation. Editorial.—p. 727.

No. 4379, December 9, 1944

The haemoglobin level in municipal school children—effect of iron therapy, school dinners and season. R. H. Dobbs, H. M. M. Mackay and K. Bingham.—p. 748.

*The dietary control of alloxan diabetes in rats. J. H. Burns, T. H. C. Lewis and F. D. Kelsey.—p. 752.

Eggs and salmonella infections. Editorial.—p. 760.

Preamble to post-war food education. F. LeGros Clark.—p. 763.

No. 4380, December 16, 1944

*A two-stage method of treatment in diabetes. R. H. Micks.—p. 784.

The nutritional value of yeast. Editorial.—p. 796.

Milk Intoxication and B_1 Avitaminosis. It is suggested that the term "breast-milk intoxication" or "human-milk intoxication" be substituted for the term "infantile beriberi." In addition to methylglyoxal, hitherto considered to be the only toxic factor in the milk of B_1 avitaminotic women, other intermediary metabolites, in concentration encountered in the milk, may play an important part. The action of these intermediary metabolites appears to be synergic and cumulative. Accumulation of intermediary metabolites in the milk of lactating women may be encountered in conditions other than B_1 avitaminosis and thus cause an intoxication. It would seem that the statement that breast milk is the best food for an infant should be qualified by the proviso that it be secreted by a healthy woman.

Nutrition In Japanese Internment Camps. The nutrition of allied nationals in Japanese internment camps is the subject of a recent report based on the evidence of repatriated doctors and nurses. The Japanese policed the camps and supplied the food, while the internal administration, preparation and cooking of food, and sanitation were in the hands of the interned. In general, the rations supplied were low in calories, protein, calcium, iron, and vitamins. Black market extras such as sugar, jam, fruit, eggs, and comforts provided by the Red Cross enabled some of the internees to survive without serious evidence of deficiency disease. Nearly all adults lost weight; losses of 40 to 60 lb. were not uncommon. The basic diet consisted mainly of polished rice, soybeans, potatoes, pot herbs, and a little pork with water, also buffalo meat, duck eggs, and white flour when available. Fresh cow's milk and watered buffalo milk when obtainable were given to infants and small children. The food was unpalatable since there were practically no facilities for cooking. Secondary anemia, muscular weakness, and edema were reported in many camps. The clinical symptoms of beriberi and pellagra and some of the manifestations of ariboflavinosis were observed. Diarrhea was reported in most camps. Spastic colitis was common. A nutritional disease affecting the eyes was reported. Unless there is quick improvement in the diet of those who are still interned, nutritional disease will become widespread with a resulting increased susceptibility to infection such as malaria and dysentery.

Hepatic Dysfunction. An attempt has been made to control the occurrence of liver damage in syphilitics under treatment with neoarsphenamine. Four sulfur-containing amino acids were tested—casein digest, casein digest reinforced with cystine, cystine and methionine. It was concluded that men undergoing antisyphilitic treatment should receive dietary supplements of at least 2.5 or preferably 3 gm. methionine daily, either by the synthetic compound or with a pint of milk daily. These supplements should not take the form of cystine as this may render the antisyphilitic treatment ineffectual.

Acute Perforated Ulcer. From 1924 to 1938 there was a progressive increase in the incidence of perforation. During the war the steady increase has been interrupted by a marked rise in 1940–

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41, not correlated with air raids. It is suggested that in addition to anxiety about the war situation, overwork and perhaps undernutrition may have exerted an influence. Perforations are unduly common in December and relatively uncommon in August, September, and October. This low incidence in the summer months may possibly have a nutritional basis or be related to the holiday season.

Peptic Ulcer. The importance of diet in the etiology of peptic ulcer has been unequivocably demonstrated by McCarrison. Peptic ulcer is very common in the south of India; in fact 58 times as common as in the north. On rats fed the well-constituted diet used by the Sikhs, and the defective diets used by the poorer classes in Madras and Travancore, he obtained the following results: first group (Sikh diet), nil; second group (Madrassi diet), 11%; third group (Travancore diet), 29% incidence of peptic ulcer. It is obviously desirable that we should have statistics which would enable us to relate the evidence of peptic ulcer to nutritional status, since many doubt if correlation is as close in this country as in India.

Food Yeast. An organization, Colonial Food Yeast, Ltd., has been formed to grow food yeast on a commercial scale in Jamaica in order to provide a cheap source of protein and vitamins for the native populations in the colonies, to find new use for sugar and molasses, and to help the sugar industry in Jamaica. Food yeast is preferred to ordinary brewers' yeast owing to the ease of manufacture and its superior flavor and palatability; 100 gm. provides 43 gm. protein, 2 mg. vitamin B_1, 5 mg. riboflavin, and 40 to 45 mg. nicotinic acid. Since it is much cheaper than animal protein it offers an excellent means of improving the dietary of populations existing on an impoverished diet. It can be introduced into bread and would afford a better and cheaper method of fortifying white bread than the addition of synthetic vitamins.

Lactation. Recent experiments show that plentiful lactation may be induced in unbred or nulliparous heifers, or dry cows, by the subcutaneous implantation of tablets of synthetic estrogens. There can therefore be no doubt that estrogen treatment is capable of increasing the country's yield of good-quality milk but unfortunately the variability of response and chance of damage due to nymphomanic symptoms at present make the treatment too uncertain for anything but veterinary trial in isolated cases.

Hemoglobin Level in School Children. The hemoglobin levels of children at two municipal schools were estimated with the Haldane hemoglobinometer. The mean level at 7 years was about 88% and there was an increase with age to approximately 92% at 10 years. The mean hemoglobin level for each age was approximately the same in February 1942 as in February or March 1943. Iron therapy for 5 months produced a mean rise of 7%, but when treatment was stopped the hemoglobin fell to approximately the level of the controls. Dinner provided at school had no effect on the hemoglobin level. The levels in 1942 and 1943 were higher than in the latter half of 1941 for children of similar economic status. The authors hesitate to accept the view that the rise is due to changes in the composition of bread, but feel certain it is due to an improvement in the diet.

Control of Alloxan Diabetes. In rats made diabetic by the injection of alloxan, a high-fat diet, when substituted for the normal diet, caused the glycosuria to disappear until the normal diet was again resumed. This abrupt change to a high-fat diet was accompanied by some ketonuria. When the fat in the diet was increased gradually, glycosuria disappeared without the appearance of ketonuria (except in one instance). The amount of diet eaten, containing 70% added fat, provided 90% of the calories available in the normal diet eaten, and maintained body weight. After successive periods of high-fat diet the glycosuria seen on return to the normal diet steadily diminished.

Treatment of Diabetes. During the first stage, the physician's only object is to restore the patient to vigorous health by adequate dosage of insulin. He does not attempt to restrict the carbohydrate intake. The second stage can begin when the patient has regained his lost weight and insulin requirements have become stabilized. Diet charts and blood sugar estimations are needed, for the object is the restriction of the carbohydrate intake in order to maintain low blood sugar levels. Dietetic control is not always practicable and it may not be necessary. By the two-stage method it becomes easier for the physician to separate those patients with whom dietetic control can be maintained and those with whom it cannot. It enables major or minor changes in insulin dosage to be made with little fear of hypoglycemia, and it enables the doctor to consider dietetic control after restoration to health instead of imposing it as a preliminary.

CANADIAN MEDICAL ASSOCIATION JOURNAL

Vol. 51, December 1944

*A practical method for the supply of fresh milk to isolated R.C.A.F. stations. J. W. Tice, F. F. Tisdall and J. F. McCreary.—p. 541.

Milk Supplies for the R.C.A.F. A practical method of supplying fluid milk for R.C.A.F. personnel in isolated stations has been devised. This consists of the use of gas-packed powdered whole milk, its thorough reconstitution by means of an electric mixer, straining and aging in a refrigerator for 24 hr. before serving ice-cold. This aging results in flavor closely approximating whole milk.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Vol. 127, January 6, 1945

*Epidemic diarrhea, nausea and vomiting of unknown cause. H. A. Reimann, J. H. Hodges and A. H. Price.—p. 1.

Vol. 127, January 20, 1945

*The enrichment of bread should be continued. Council on Foods and Nutrition.—p. 160.

Epidemic Diarrhea. A widespread milk epidemic disease characterized by anorexia, malaise, diarrhea, nausea, and vomiting occurred in October and November of both 1943 and 1944 in Philadelphia and its environs and in other widely scattered places at the same times. In a group of medical students studied in 1943, 20% were affected; in 1944, about 10%. The outbreaks were similar to previously reported epidemics elsewhere and were probably of the same entity or a similar one. They were apparently not related to food or water and not caused by any known bacilli of the so-called enteric group. A filtrable virus has been suggested to be the cause, but whether the infection is primarily one of the respiratory tract, the central nervous system, as some observers believe, or of the gastro-intestinal tract, which seems more likely, is still unknown. The infection is believed to be an air-borne one which gains entry through the respiratory or gastro-intestinal tract. It is probable that the syndrome is a common one but is often ignored, unrecognized, or mistaken for influenza, food poisoning, bacillary dysentery, acute appendicitis, or mesenteric adenitis.

Enrichment of Bread. The present compulsory enrichment of baker's white bread and rolls terminates with the resolution of the wartime powers of WFA. The problem then reverts to the individual states as to whether such enrichment is to continue. Legislation at the federal level would affect only those products handled in interstate commerce. Both federal and state action will be required to ensure entirely effective regulations for enrichment of food throughout the country. The effect of the widespread increase in consumption of these enriching substances on the nation's nutrition as a result of mandatory enrichment of all white bread and rolls is difficult to measure accurately at this time. All methods of appraisal, however, indicate a definitely beneficial influence. If the nutritional gains thus far made are to be maintained, the active interest of every informed person who has the public interest at heart will be required.

JOURNAL OF CLINICAL INVESTIGATION

Vol. 23, November 1944

*Serum albumin regeneration as effected by intravenously and orally administered protein hydrolysates. W. M. Cox, Jr., and A. J. Mueller.—p. 875.

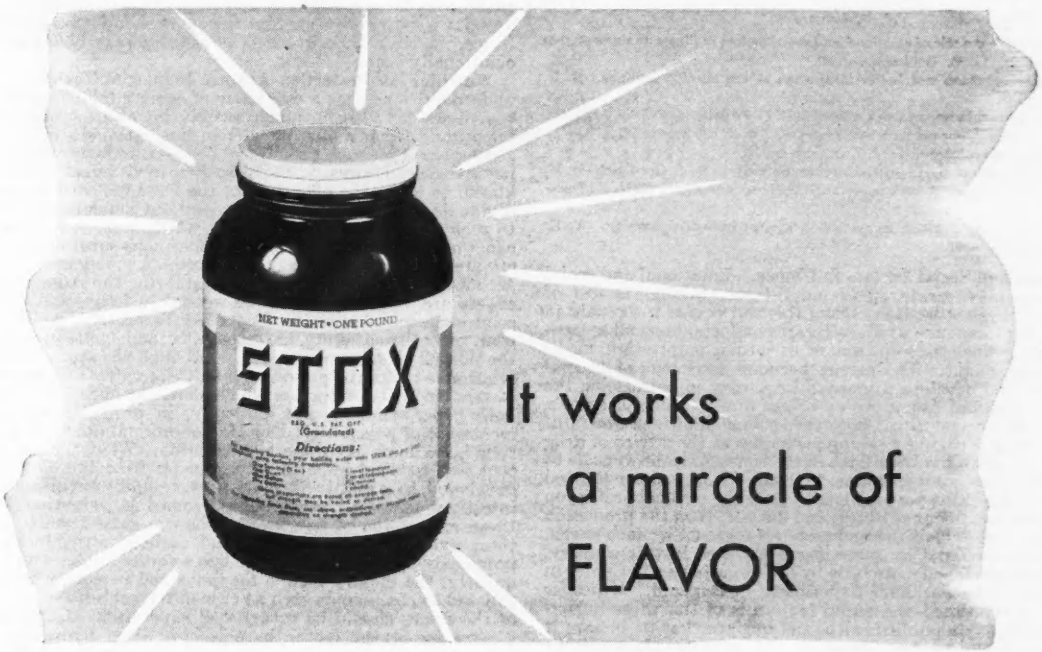
Albumin Regeneration. Enzymic hydrolysates of casein, lactalbumin, and beef serum protein, which are nutritively equivalent to the original proteins, are equally effective in the regeneration of plasma albumin in hypoproteinemic dogs, whether given orally or intravenously. The significance of these findings is discussed.

JOURNAL OF PEDIATRICS

Vol. 25, December 1944

*The metabolic basis for the individualized feeding of infants, premature and full-term. H. H. Gordon and S. Z. Levine.—p. 464.

Individualized Infant Feeding. Appreciation of variations and proper interpretation of their pathogenesis provide the physiologic background for proper individualization in the feeding of infants, sick and well, premature and full-term. For many years, human milk, relatively high in water and fat and low in calcium, phosphorus and protein, has been the feeding of choice for premature infants. Reported data suggest the desirability for critical reevaluation of this clinical impression which may actually be a mistaken one because of the many complicating factors which confuse the picture: degree of prematurity, amount and quality of nursing and medical care, environmental temperature and humidity, and incidence of infections. Well-controlled and prolonged clinical studies which should provide the answer are now in progress. It has been shown that an infant whose birth weight was only 662 gm. can thrive on a properly prepared artificial feeding.



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MILBANK MEMORIAL FUND QUARTERLY

Vol. 23, January 1945

*Proper attention to the rôle of emotional and social factors in illness as a new step in public health. G. C. Robinson.—p. 20.

*More adequate provision and better integration of community facilities. B. B. Burritt.—p. 28.

*The role of nutrition in preventive medicine. F. F. Tisdall.—p. 39.

Nutrition—its place in our prenatal care programs. B. S. Burke.—p. 54.

*The importance of prenatal diet. J. Warkany.—p. 66.

*Protecting the health of the industrial worker: nutrition. R. S. Goodhart.—p. 78.

*The effects of hard physical work upon nutritional requirements. W. H. Forbes.—p. 89.

*The improvement in nutrition as protection against industrial toxicity. W. E. Crutchfield, Jr.—p. 97.

Emotional and Social Factors in Illness. Emotional and social disturbances may create emotional fatigue, taking its toll of mental and physical health. When this toll begins to be paid in terms of symptoms such as digestive discomforts, unusual muscular fatigue, headaches, sleeplessness, or cardiac palpitation, medical advice is sought. The person becomes conscious of "social incapacity" and develops a sense of insecurity in performing the natural activities of living, which brings him to a doctor or to a clinic. In many instances, however, people with symptoms of emotional fatigue begin by taking medicines at the advice of drug store clerk, or show lively interest in the constant radio appeals to feed on laxatives and vitamins. If individuals were educated to the point of seeking positive health from the medical profession as well as the treatment of illness and disease, then the profession would learn to offer facilities and methods for meeting such needs. Such service is offered by some group practice in this country, and has been developed more fully by the Pioneer Health Center in what is called the Peckham Experiment in England. If proper attention to emotional and social factors is of the value in preventive medicine, in public health, and hygiene that we believe it to be, what should be done about it? Three suggestions may be made: Greater emphasis should be given to understanding and methods of dealing with emotional and social components of health and illness in medical education. Efforts should be made in the organization of medical practice by groups, hospital staffs, and individual practitioners to provide for greater emphasis on positive health, in which the emotional and social factors play a larger part than is generally considered. Proper attention to the role of emotional and social factors of illness would serve to make the bond between the medical profession and the public stronger than it is at present.

Public Health. Of primary importance is the concept of the maintenance of health, rather than the treatment of disease, as an objective. To maintain health, periodic health inventories are needed to determine early departures of individuals from healthy conditions. The concept of the relation of the individual personality to disease and the basic concept of the individual as an integral part of the family make new demands upon present community services and public health programs. Health education requires more careful and effective plans, new techniques, and more adequate facilities for teaching health.

Nutrition and Preventive Medicine. Diets not adequate in all respects, but not producing well-marked classical deficiency syndromes, may impair the health and efficiency of the individual throughout life. Because of their infrequent occurrence the so-called nutritional deficiency diseases, such as scurvy, pellagra, and beriberi, do not constitute important public health problems. "There is no one factor which so affects the health of the people as the food they eat."

Prenatal Diet. Maternal nutritional deficiency is directly related to certain anatomical abnormalities of the offspring. The specific deficiencies which produced anatomical abnormalities of the offspring were riboflavin and vitamin D. Lack of riboflavin in the maternal diet produced a proportion of offspring with abnormalities such as syndactylism, brachydactylism, and cleft palate. Vitamin D deficiency was found to manifest itself in the fetus in a different way than in the infantile rat; it produced a peculiar abnormality of the ribs in which the osteoid was missing or not abundant. The science of nutrition should be concerned not only with the maintenance of the human machine but should also pay attention to its sound construction.

Health of Industrial Worker. It is of prime importance that industrial management recognize the extent of its responsibility for the nutrition of its employees. This will probably result when the relationship between nutrition and health, morale, fatigue, industrial diseases, and accidents is clearly presented to management. Unfortunately, except in a few noteworthy instances, industrial physicians have been too preoccupied and overworked to take a very active interest in the workers' nutrition problems.

Nutritional Requirements in Hard Physical Work. The general indications from experimental studies are that light or moderate, or even hard physical work adds only to the caloric requirements and increases the needs for proteins and certain of the vitamins little, if at all. Nothing is known of the extra requirements, if any, for the kind of work that the average industrial worker performs, namely, work which is physically easy but nervously or emotionally tiring.

Nutrition as Protection Against Industrial Toxicity. General undernourishment or a deficiency of some vital element of nutrition increases fatigue, and certainly increases susceptibility to infection. "It is a long jump from this demonstrated fact to the assumption that such nutritional deficiencies increase susceptibility to toxic exposures." High-fat diets in vitamin C deficiency are known to lower the efficiency of the liver too, and to render individuals suffering from such a complaint much more susceptible to such poisons as trinitrotoluene, which seem to have a specific effect on the liver. Certain other poisonous substances which are encountered in industry, notably benzol, a widely used compound, act more or less on the blood by destroying the red cells, and the effects are very dangerously increased in individuals who show some evidence of anemia. Diets low in protein, and lacking in iron, generally speaking, are essentially inadequate in maintaining the normal blood constituents. Although the study of diet with relation to industrial poisoning is in its infancy, there are a number of reports in the literature which show the effective use of food, both experimentally and clinically, in prophylaxis as well as treatment of poisoning. Dogs fed on normal diets tolerated well very large doses of carbon tetrachloride. When the calcium content was reduced by withholding bones from the diet, the dogs developed, in a relatively short time, tetanic convulsions, gastrointestinal distress, hemorrhages, vomiting, retention of urine. Upon restoration of bones or calcium in some form to the diet, these symptoms disappeared, and carbon tetrachloride in the previously administered dosage was tolerated quite well. Consequently, the dietary regime for industrial persons who might be exposed to compounds such as carbon tetrachloride by inhalation of the fumes should be rather well supervised. Calcium is also a very important factor in poisoning from hydrofluoric acid. When hydrofluoric acid vapor, or fluorine gas, is inhaled, it acts more or less as a protoplasmic poison and also interferes with the normal metabolism of calcium. Dietary calcium also plays a rather important role in lead poisoning. Lead enters the system chiefly by way of nose and throat, by inhalation, where it is absorbed from the lung in the circulating blood. Storage and excretion of lead appear to be controlled by the calcium metabolism. If the patient's diet has a high calcium content, lead is deposited in the bones, immobilized, so to speak. In treatment of acute lead poisoning, administration of calcium intravenously and orally is essential and chronic cases should have a diet rich in calcium and about 60 gr. calcium lactate daily by mouth. Nutritional prophylactic treatment for workers exposed to lead, even at its irreducible minimum concentration, is essentially that for preventing rickets—a quart of milk daily and a tablespoon of cod liver oil or vitamin D in some other form. Nickel poisoning is an entity now seen more often because of the wider use of nickel carbonyl, which is sufficiently volatile to be inhaled. It causes degeneration of heart, liver, kidneys: treatment includes forced elimination through bowels and kidneys, and a low-fat diet. Although no reference has been found in the literature to prophylactic use of a low-fat diet for workers exposed to nickel, such a procedure seems indicated and might be very effective. The blood picture in the early stages of benzol poisoning shows anemia, leukopenia, thrombopenia, and diminished clot retraction. Nutritional deficiencies, especially in vitamin C and riboflavin, and obesity, cause greater susceptibility to the aromatic hydrocarbons. Poisoning by T.N.T. constitutes a very great hazard and appears to be influenced somewhat by diet. Experiments with rats have shown that severe symptoms and pathologic lesions result from this substance when the animals are given a ration high in fat, whereas the effect of exposure to T.N.T. was decreased by very high-carbohydrate rations and was almost nil with high-protein diets. Blood levels of vitamin C in about half the cases of T.N.T. poisoning were notably low. "Too many of the larger industries in this country are not sufficiently aware of the hazards or are not willing to allocate funds to maintain a laboratory or department with facilities for studying the nutritional status of the personnel. Therefore, it obtains that this, at the moment, is about the most fertile field that I can think of for scientific research, particularly with a view to mass improvement of a vital and necessary sort."

SCIENCE

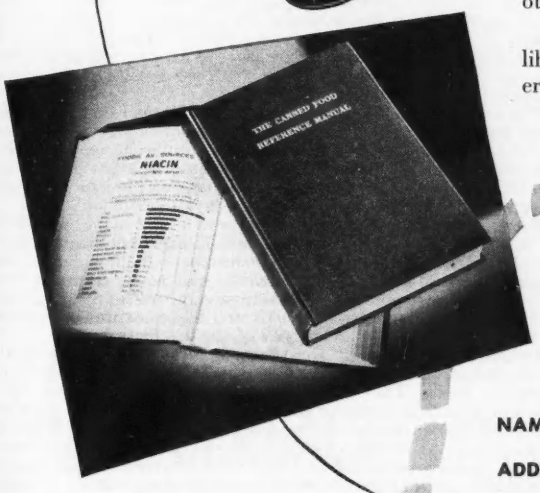
Vol. 100, December 8, 1944

*Items. Science News.—p. 10.

Vol. 100, December 15, 1944

*Effect of vitamin B_6 (pyridoxine) in the treatment of leukopenia and granulocytopenia of toxic origin in humans. Preliminary report. M. M. Cantor and J. W. Scott.—p. 545.

KEEPING ABREAST OF THE LITERATURE ON NUTRITION



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Vol. 100, December 22, 1944

Vitamins in our food. Science News. A. E. Murneek.—p. 7.

Vitamin Factories in Our Bodies. New standards for the amounts of vitamins required in the daily diet and for the amounts of foods needed to supply them may come from discoveries that vitamin factories exist in the body, it appears from the report of Professor C. A. Elvehjem. These internal vitamin factories are operated by bacteria inhabiting the intestinal tract. Vitamin synthesis by intestinal bacteria apparently varies in different species of animals and according to the type of diet, exclusive of its vitamin content.

Pyridoxine in Treatment of Leucopenia. This study suggests that pyridoxine hydrochloride administered intravenously is a useful agent in the treatment of agranulocytic angina of toxic origin. Its effectiveness in three instances arising as a result of toxicity due to three chemically unrelated drugs suggests that pyridoxine acts by direct stimulation of the myelocytic elements of the bone marrow.

SOUTHERN MEDICAL JOURNAL

Vol. 37, December 1944

*Hyperinsulinism. S. Harris, Jr.—p. 714.

Hyperinsulinism. When hyperinsulinism was first recognized, it was naturally assumed that the proper diet should be high in carbohydrates. It was soon found, however, that carbohydrates stimulate insulinogenesis and that although patients treated in this way showed initial improvement, they eventually became worse. A high-fat, low-carbohydrate diet was found to give much more satisfactory results. The fact that many of these patients are already overweight made the high-fat diet impractical in many instances. A high-protein, low-carbohydrate diet has more recently been advocated. The most satisfactory results from diet are obtained when each patient has a diet planned for his individual requirements. The carbohydrate intake should always be kept as low as practical and the patient should receive at least five small feedings during the waking hours, supplemented by fruit or fruit juices as desired.

AMERICAN RESTAURANT MAGAZINE

Vol. 28, December 1944

*Inventory procedure. Horwath and Horwath.—p. 31.
*Toll House. S. S. Pfeiffer.—p. 32.

Inventory Procedure. In most restaurants, there are two groups of inventories—one for the storeroom and one for foods which have been issued to the kitchen but not used. To facilitate the procedure, articles in the storeroom should be arranged in an orderly manner and a specially designed stock inventory book kept so that items need be written only once yet twelve consecutive inventories may be recorded. The general classifications of articles must be made according to the size and variety of the stock. In taking inventory, articles on the shelf should be checked with the book so that nothing is missed. The kitchen inventory should be taken on loose sheets that are labeled and issued to an employee who knows what is on hand. After the inventories have been priced, extended, and totaled, the next step is to reconcile the actual value of the storeroom inventory with the book value and determine the amount of shortage or overage, by the following formula: storeroom inventory at beginning of month, plus total food purchases equal total debits. Storeroom inventory at end of month, plus issues direct to kitchen, plus storeroom requisitions equal total credits. Total debits, minus total credits (or vice versa) will show whether the storeroom is over or short.

Toll House. The Toll House Restaurant was opened in 1930 by Ruth and Kenneth Wakefield, Whitman, Mass., with one cook, one waitress, $50 in cash, and a mortgage on a former toll house. They incorporated three qualities—imagination, knowledge of food, and pride in doing a good job—and made the Toll House one of the most famous restaurants in the United States. Instead of 7 tables, they now have 4 private and 2 main dining rooms and on an average Sunday serve 2400 guests. A peak staff of 125 has been decreased to 85, but only 3 employees have left the Toll House for defense jobs. Meals are served continuously from 12 to 8 and set dinner prices are $1.35 to $3.00, although many à la carte items are featured. During the war period menus and recipes have been adjusted because of rationing, and many desserts omitted, even the "Toll House Cookies" made famous there.

BAKER'S HELPER

Vol. 82, December 16, 1944

*Simplified streamlined production through prepared mixes. W. E. Broeg.—p. 64.

Streamlined Production. Bakers find it economical and convenient to have prepared doughnut mixes on hand. The following recipes are given: doughnut or cruller hand-cut type; doughnut or cruller #2; whole wheat doughnuts, dry blend #1 and #2, and a time saver method; prepared doughnut glaze; chocolate and orange doughnut glaze; simple syrup; sweet dough for yeast-raised doughnuts.

BUILDINGS AND BUILDING MANAGEMENT

Vol. 44, December 1944

*A practical digest of tested cleaning methods.—p. 25.
*Trends and developments in post-war office lighting. C. W. Zensen.—p. 29.

Floor Cleaning Method Survey. A digest of practices found more effective includes methods for cleaning floors of marble, terrazzo, linoleum, ceramic tile, cement and concrete, rubber tile, asphalt tile and mastics, cork, wood, carpets and rugs, and for cleaning marble walls and wainscoting, acoustical ceilings and toilet rooms. Some managers suggest that lacquer not be used on linoleum; others avoid hand-scrubbing on floors, and soap on marble and terrazzo floors.

Postwar Lighting. The general consensus is that fluorescent lighting will dominate new lighting and relighting projects. The home will be the largest outlet for fluorescent lighting; the commercial establishment, second largest. The matter of ocular discomfort is being investigated by a prominent physiologist whose theory is that bare fluorescent lamps in the direct line of vision cause a nutritional disturbance, accompanied by ocular discomfort.

FOOD INDUSTRIES

Vol. 16, December 1944

*Lye peeling pays off. R. L. Dunlap.—p. 72.
*Trends in plant sanitation. A. J. Krog.—p. 76.
*Foods with future from yams.—p. 75.
*New facts about packaging and storing dehydrated foods.—p. 94.
*New cottonseed flour high in protein value.—p. 110.
*Cereal chemists learn trends in shortenings.—p. 110.
*Blanched blueberries.—p. 151.
*High viscosity starch.—p. 151.

Lye Peeling of Potatoes. The J. R. Simplot Dehydrating Co., Coldwell, Idaho, has found that by means of lye peeling instead of using abrasive peelers a pound of dehydrated potatoes can be made from 7.5 lb. raw potatoes instead of 13 lb., a gain of 65 lb. potatoes per 100-lb. bag. In addition, there is a saving in man-hours as the same number of men can produce this greater yield. Successful lye peeling depends on precooking the potatoes to a depth of $\frac{3}{4}$ in., which facilitates removal of the peel and prevents oxidation by enzymic action during trimming. The cooking in the lye peeler adds another $\frac{1}{16}$ in., and the washing which follows removes the disintegrated tissues to that depth. The inactivation of the peroxidase enzyme allows the potato to be held without danger of "reddening" or "graying ends." The lye solution is held at about 14% with the temperature as near boiling as possible. The cost of the caustic is about 3 cents per 100 lb. raw potatoes processed.

Plant Sanitation Trends. Since the adoption of the present Food, Drug, and Cosmetic Act in 1938, the entire picture of sanitation in food plants has been viewed with a different aspect by control officials. The method of condemning obvious unsanitary conditions is now replaced by microscopic, sample container, and other scientific methods developed in the laboratory.

Foods From Yams. Sweet potato products as manufactured in the newly installed plant at Alabama Experiment Station have already attracted attention. New products include baked and toasted ready-to-serve sweet potatoes—not to be confused with dehydrated sweet potatoes. Within several weeks after production began, 25 companies in the United States expressed interest in the manufacture of one or more of the products.

Dehydrated Potatoes. Dehydrated potatoes, when properly reconstituted and served as mashed potatoes, are a delicious and attractive food. They are a good source of ascorbic acid, but a poor source of thiamin and riboflavin. They remain in a satisfactory condition during storage periods up to 12 months if stored at 80° F. or less. The type of package has little effect on their keeping qualities, provided the package is sufficiently moist and vapor-resistant to prevent the potatoes from absorbing water. Vitamin content, moisture content, and flavor retention seemed to remain the same regardless of the package used. As in the case of all dehydrated vegetables, potatoes deteriorated considerably when stored at elevated temperatures.

Compare this infant cereal with any other you know!

CLAPP'S INSTANT CEREAL FOR BABIES

Clapp's Instant Cereal is prepared from mixed cereals, enriched with vitamins and minerals, notably vitamin B_1 (thiamine) and Iron, in which the diet of infants and young children may be deficient.

INGREDIENTS

Whole Wheat Meal • Malt • Dicalcium Phosphate • Corn Meal • Dried Skim Milk • Salt • Wheat Germ • Dried Brewers' Yeast • Iron Ammonium Citrate

1 ounce of Cereal contains not less than 100 U. S. P. units vitamin B_1 and 0.18 milligrams vitamin G.

TYPICAL ANALYSIS

Carbohydrate 71.7%	Calcium (Ca) 0.34%
Protein (N x 6.25) 16.0%	Phosphorus (P) 0.80%
Fat (ether extract) 1.2%	Iron (Fe) 0.021%
Ash (total minerals) 3.8%	Copper (Cu) 0.002%
Crude Fiber 1.6%	Calories per avoir. ounce 102.
Moisture 5.7%	

USE and PREPARATION

To prepare for serving, place dry cereal in serving dish, stir in warm milk, formula, or warm water in proper quantity for desired consistency. 1 level tablespoon of cereal and about 2 tablespoons of liquid give consistency most likely desirable for infants' first cereal feedings. Ten tablespoons equal 1 ounce.

NUTRITIONAL VALUES

While the quantity of Clapp's Instant Cereal used may vary considerably for the individual, ½-oz. and 1-oz. quantities may be considered average daily amounts for the infant and young child respectively. These amounts furnish the following percentages of the minimum daily requirements:

INSTANT CEREAL: For infants, 60% of vitamin B_1; 18% of vitamin G. For young children, 60% of vitamin B_1; 80% of Iron; 12% of Calcium; 33% of Phosphorus.

Clapp's Instant Cereal contributes to the essential Calcium, Phosphorus, and Iron requirements of infants, and the vitamin G requirements of children, but because of variations in the requirements of individuals, and other factors, it is impracticable to establish minimum daily requirements.

The Council on Foods of the A.M.A. suggests that infant cereals may well be selected upon the basis of furnishing vitamin B_1 and Iron. Clapp's Cereals are an excellent source of these two food elements and thus are preferred for inclusion in infants' diets.

CLAPP'S BABY CEREALS

Harold H. Clapp, Inc., Dept. F-3
22 East 40th Street, New York 16, N.Y.

Please send me a supply of professional samples of Clapp's Instant Cereal and Clapp's Instant Oatmeal.

Name_____

Address_____

City_____ State_____

Protein Value in Cottonseed Flour. A defatted, wholesome, and palatable cottonseed flour is now being prepared for human consumption, with a protein content of 50%, of which the greater part is globulin—nearly equal in digestibility to milk casein. The total protein is 80% as digestible as meat and 90% as digestible as cereals. It is a good source of the essential amino acids and particularly suited to supplementing cereal grains. Addition of 5 parts to 95 parts wheat flour produces a mixture containing 16% more protein than wheat flour alone.

Shortenings. Users of fats will obtain higher quality and perhaps wider variety of products in the future. The annual loss of 1,000,000,000 lb. raw material supplies from the Pacific and East Indies since January 1942 stimulated an increase in domestic fat production from 7,300,000,000 to 11,400,000,000 lb. for the 1943–44 crop year. The biggest changes in percentage of total fats and oils used in shortening manufacture in 1943 were 64.4 to 41.7% cottonseed oil and 14.3 to 41.5% soybean oil.

Blanched Blueberries. Loss of flavor and development of woody texture in frozen blueberries can be corrected by blanching. Steam-blanched berries packed in dry sugar at a 5:1 ratio are reported to have excellent flavor and aroma, with a good degree of firmness and no toughness in the skins. Citric acid did not improve flavor, color, or texture of unblanched berries. Passing the berries through live steam 1 min. on a wire screen gave good results, but the time of blanching can be increased to 2 or 3 min. for tough berries. The development of the woody texture is attributed to an enzyme which is inactivated by heat.

High Viscosity Starch. Important characteristics of starches from glutinous corn and sorghum now being used to replace tapioca are translucency, absence of flavor, and absence of stickiness.

HOTEL MANAGEMENT

Vol. 46, December 1944

*How a simplified training program is helping us solve wartime problems. W. V. Sinclair.—p. 32.

*Simple ways in which to combine soy products with your present recipes. A. Easton.—p. 36.

Simplified Employee Training. The need to train many new employees has brought a marked modification in the "French" type of hotel service with the use of many platters and side dishes. Simplified training of new employees includes brief instructions posted to help reduce confusion and arguments about service. Suggested instruction lists and posters are reproduced in the article. Cushioned-wheel dish trucks are used to save time and manpower. Shorter menus caused by food rationing and shortages facilitate control of short items which are written on a blackboard in the serving unit with the substitution listed opposite. Courtesy is increasingly stressed.

Soy Products. Fresh green soybeans are similar to green Limas and may be prepared with creole sauce and bacon or au gratin. Dry soybeans require twice as long to cook as navy beans. The juice is thin and may be thickened or seasoned with tomatoes. Soy flour has no thickening power. High-fat flour, made from the whole bean, is used in baking; high-protein flour, to enrich soups and meats. Not more than ¾ cup soy grits should be used to a pound of meat in a loaf. To enrich recipes the following rules may be applied: sweet rolls—for every gallon of water or milk add 1 lb. high-fat soy flour plus a pound of extra water; bread—to every 5 lb. wheat flour add 8 oz. high-fat soy flour, 6 to 8 oz. extra water, and ½ oz. salt; cakes—to every 5 lb. wheat flour add 8 oz. high-fat soy flour, 10 oz. extra water, and ½ oz. extra baking powder; cookies—to every 5 lb. wheat flour add 2 to 4 oz. high-fat soy flour, 1½ to 3 oz. extra water, and ½ oz. extra baking powder. Some soy dishes suggested are chicken soufflé with soybean sprouts, ham loaf with soy grits, chili con carne with soybeans, soy corn fritters.

JOURNAL OF HOME ECONOMICS

Vol. 37, January 1945

The kitchen of tomorrow. H. E. McCullough and M. K. Heiner.—p. 8.

*A practical study in nutrition education. P. Woodward.—p. 19.

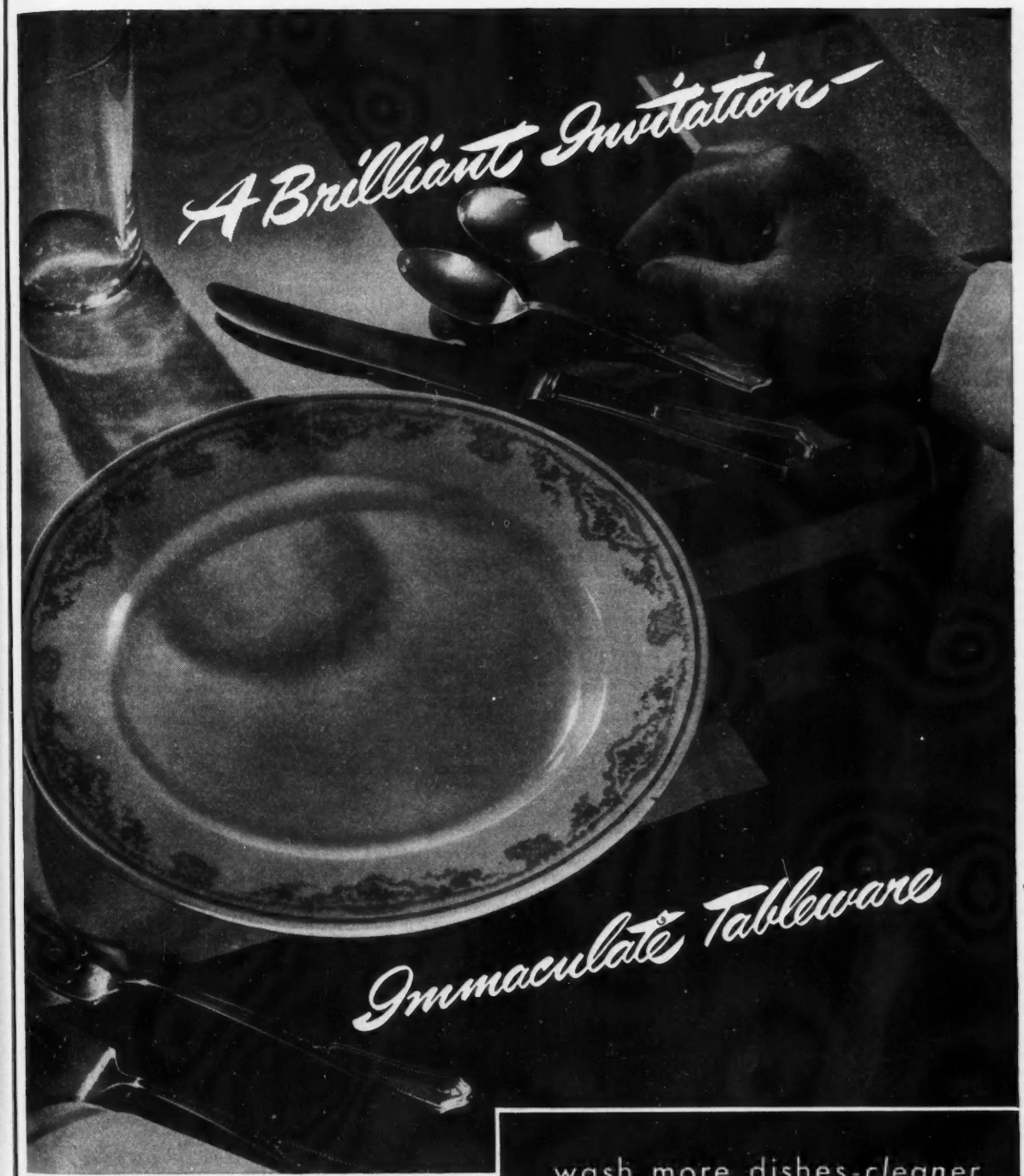
*Trends in freezing preservation of foods. V. D. Greaves and M. M. Boggs.—p. 23.

*Letters from our readers.—p. 33.

*Protection for families. Comment.—p. 36.

Presenting New Food. To discover in what way attitudes toward a new food can be used as clues to ways of increasing its acceptability, and whether different combinations of appeals differ in their effectiveness, the soybean and its products were selected for study. Men and women in different parts of the country were asked, "How do you feel about using soybeans as food?" Outstanding was the fact that soybeans were not thought of as a particular kind of food even by those people who had had some slight experience in eating them; there were few real prejudices against them, except for the rare individuals who knew of their use in industry and who definitely didn't want to "eat paint or steering wheels!" It was decided, accordingly, that it was necessary to teach people to think of the beans as a definite kind of food. The answers were studied carefully and the reasons pro and con for being interested in eating soybeans compared. Four aspects seemed particularly likely to increase favorable attitudes: that scientists had found them to be of high nutritional value; that they are grown and processed in America (if they were thought of as an Oriental food, they would not be used frequently by Americans); that one can get good value for one's money in buying them (the emphasis was on the "good bargain" and not on the "cheapness"); and that they can be used in a great variety of ways. It was thought desirable to avoid overemphasis on the nutrition appeal because Americans are likely to think of foods that are "good for us" as being different from those that are "good to eat"—the first being nourishing, the second pleasurable. A study was made of customer reactions, in a cafeteria, to dishes in which soy flour or grits were combined with a familiar food in familiar form: meat loaf, muffins, macaroni and cheese, split pea soup, in quantities not large enough to change the taste. Each dish was served 1 day a week for 4 weeks. During the first, they were listed by usual names; the next 3 weeks, as soy dishes. Appeals were carried on large colored posters, placed in 4 of 6 cafeterias during the third week only. The sets of posters were identical in design, but legends differed from cafeteria to cafeteria, depending upon combination of appeals used. Records were also kept for the fourth week when posters had been taken down. About 1000 customers were observed in each cafeteria each day. During the second week, consumption of dishes labeled "soya" dropped. That of muffins remained about the same, except in the cafeteria where only the nutrition appeal was used. After the posters were removed, consumption of soy muffins increased in the cafeteria where only the nutrition appeal had been used and decreased elsewhere, which was attributed to the fact that spoon bread was served as a vegetable, an innovation, that customers needed an excuse to take an extra bread, and that the emphasis on the nutritional value of soy muffins provided such an excuse. Less soy macaroni and cheese was consumed by women in the cafeteria where only the nutrition appeal was used; the reverse, where no mention was made of nutrition appeal. The same was true for meat loaf consumption by both men and women, and, in addition, the consumption remained higher than in any other cafeteria after the posters were removed. "The emphasis on the nutritional value of a new food is a very different matter from pointing out the nutritive value of an already accepted and liked food." [Note: According to information received from the Committee on Food Habits, National Research Council, 2101 Constitution Avenue, Washington 25, detailed reports of this study can be obtained upon request.]

Freezing Foods. Frozen fruits and vegetables placed in the freezing compartment of a refrigerator immediately after removal from freezing storage may be held safely for about two weeks; in a refrigerator at 38 to 40° F., about 3 days, but must be watched for signs of deterioration, in which case they should be discarded. No case of botulism from frozen foods has been reported. Unscalded vegetables lose large portions of ascorbic acid, thiamin, and carotene and less of riboflavin during frozen storage. Blanching reduces losses but may result in loss of one third ascorbic acid and one fourth thiamin. Riboflavin and carotene are not lost in significant amounts during scalding. Some loss of water-soluble minerals, protein, and carbohydrate occurs. Water scalding of vegetables, other than corn on the cob and legumes, results in larger losses of ascorbic acid and presumably of other water-soluble nutrients than does steaming, even though steaming requires slightly longer periods. Often as much, if not more, is lost in chilling as in scalding because of large amount of water used—a problem which has received less attention. Usual treatment of fruits before storage probably does not cause loss of nutrients unless there is undue delay and improper refrigeration. Storage of properly blanched vegetables at 0° F. or lower for periods up to one year involves no significant loss of riboflavin and little or no loss of thiamin; a small carotene loss has been reported in blanched green vegetables during the first 6 mo. storage at −4°F., and an appreciable loss after 12 mo. There is apparently a slow decrease in ascorbic acid during the storage of vegetables, the lower the temperature the less significant the loss. Fruits such as citrus fruits and certain berries that do not discolor when injured mechanically retain ascorbic acid content well during storage but may lose a considerable amount if held after defrosting. Readily discolored fruits lose ascorbic acid unless protected against oxidation by packing in sugar or sugar syrup. Storage at −10°F. for 6 mo. results in little or no loss of carotene. Frozen meat, fish, poultry, and eggs are considered equivalent to fresh products in nutritive value, though few comparative analyses have been made. More information is needed on nutritive values of strictly fresh and market-fresh foods, as compared with frozen, canned, and dehydrated. Frozen concentrated orange juice, boned meat, and cuts of meat in packages may soon appear on the market. A



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method has been reported for freezing mixed eggs in small bricks, each containing one egg, which can be broken from a block of bricks and thawed quickly. Surprisingly few studies concerning frozen precooked foods have been made. When exact procedures are worked out, freezing of most products will undoubtedly yield better quality than has been possible in canned goods because of high temperatures needed for sterilization by heat. For some precooked dishes the time required for defrosting and heating may be a serious disadvantage but may be overcome by developments in electronics, which may provide a means of dielectric heating that will rapidly and uniformly defrost and heat foods.

A.H.E.A.'s Legislative Program. Includes letters from several members concerning a previously published discussion. A few excerpts: (1) "No activity in which the association engages is more important than the promotion of a legislative program. This activity alone could serve as our excuse for being. . . . It is certainly as important for intelligent, nonpartisan organizations to support or oppose a bill which affects home and family living as it is for groups which are biased and working for individual gain. . . . We are obligated to become informed, weigh both sides and determine which is the 'greatest good for the greatest number of people.' . . . Legislation is not a panacea for all our ills, but it has a very definite place in the improvement of home and family living." (2) "In considering whether the A.H.E.A. should abandon legislative work wouldn't it be well first to analyze the way the legislative program has worked? Has it been a democratic program, representing the majority of opinion, and has it been effective? . . . I found it difficult to be sufficiently informed on both sides of a question and to digest and present this information intelligently to members. . . . Abandoning the program does not seem to me to be the solution. An educational program alone could hardly accomplish as much as an educational program combined with an intelligent legislative program." (3) "If legislative work is to continue, certainly a new way to determine member approval is needed. Perhaps some poll technique could be used and the members be kept informed of proposed legislation through the *Journal*. It might also be used to back up the A.H.E.A. representatives to various governmental agencies such as WPB, OPA, and to have them truly represent the association and not just a few members. Dr. Storms urges 'First save the profession.' Really we should first make it a profession. A nurse in the U.S.A. is accepted as a professional person because of the work of various organizations. When a person says she is a home economist someone is likely to comment, 'Oh, you can cook.' Mrs. Harris no doubt would say education is needed to correct that impression. Certainly passing a law would not correct it." (4) "The more knowledge we have the more responsibility we have both for sharing it with others and for using it to promote social and economic progress. Much of this progress must be secured through legislation—federal, state, and local. When it comes to federal measures, sponsorship by a professional group representing all sections of the country is recognized as being more effective than the efforts of individuals."

Social Security. At its annual meeting the A.H.E.A. went on record as supporting legislation to extend social security benefits to families not now covered. Legislation to bring about at least some extension of coverage is certain to be introduced. The Chamber of Commerce of the United States last year set up a special committee to study social security legislation, and drafted a 21-point social security program and in August submitted it to its 2300-odd member organizations for vote. Only one section was rejected—the proposal to extend benefits to domestic servants. Groups to whom the present system of old age and survivor's insurance should be extended "when practical," in the opinion of the Chamber, are employees of nonprofit organizations, federal, state, and local employees, agricultural employees, and others except domestic servants. "Since no other single bill in this session of Congress will be likely to affect American families so directly and vitally, home economists will want to study the provisions of whatever social security bills are presented and then use their influence to get for families the greatest possible protection against 'the slings and arrows of outrageous fortune.' "

PERSONNEL JOURNAL

Vol. 23, January 1945

*Psychology of the reprimand. R. R. Brown.—p. 261.
*Human relations in business. L. C. Hart.—p. 265.
Absentee control plans. C. O. Pickard.—p. 271.

Psychology of the Reprimand. Planning and timing are as necessary to the reprimand as to other supervisory functions. To the supervisor, reprimanding is simply the exercising of his responsibilities and the demonstrating of his authoritative control, but in many instances, the final result is the creation of additional problems in morale and efficiency. An employee does not enjoy making mistakes, so why does the supervisor work himself into such a heat? This is often an expression of a fundamental psychological drive; the will to power, which, when out of control, leads to all sorts of trouble. Causes for 90% of mistakes may be traced to four sources: the employee didn't know what was expected, he could not do what was expected, he didn't know how to do what was expected, or he would not do what was expected because it was not in line with his idea of company policy. Nothing is gained by negative rather than positive corrections; the supervisor needs a clear understanding of the fundamental factors involved. If an error is sufficiently serious to warrant discussion, it is deserving of consideration in an atmosphere conducive to calm judgment and easy exchange of ideas. Why not sit down with the employee to discover together the factors which are responsible for the difficulty. A check list, based on the causes of errors, is given in the article.

Human Relations in Business. There are two phases of managerial work, system and personal leadership, and neither can accomplish much without the other, although organized routine or system exists only to make personal leadership more effective. The risk taken by a person in managerial responsibility is that of overbalancing one phase with the other. The heart of management is change, which constantly causes managerial effort to be exerted in two quite different directions: getting known methods used consistently by all subordinates, and creating and establishing still better methods. Weak, unimaginative management concentrates almost its entire attention on the first of these two types of supervision. Management must also deal with three groups over which it has no authority or right of administrative control—superiors, associates, and the general public—and must become adept at this type of business relations. The most fascinating phase of human relations is the technique of handling subordinate personnel, as this provides the best opportunity for management to make a contribution to employee welfare. Personal interviews represent an important part of a manager's duties. For these, a check list, an example of which is included in the article, is often a good guide and reminder.

PRACTICAL HOME ECONOMICS

Vol. 23, January 1945

Improve your public relations. L. H. Geil.—p. 14.
*The school lunch program. D. M. Garrett.—p. 20.

School Lunch. The school lunch program has stimulated many community groups to work together constructively, because they have found a problem of common interest to all. It probably has been one of the most gratifying examples of a varied group of organizations and agencies, local, state and national, coordinating their efforts for the solving of a common problem. A well-administered school lunch program can serve two purposes: to promote healthy bodies so necessary for good mental training; to serve as an extended classroom, offering an opportunity for school-wide lessons in courtesy and etiquette and, for home economics classes, practical problems and experience in buying, quantity cookery, and sanitation. School lunches prepared from SMA supplies have proved the efficiency of planning and serving only one menu pattern which is varied from day to day. When menus are carefully planned, one can feel sure that a well-balanced meal has been served to every child eating in the lunchroom.

Christmas Dinner Menu, 1918, Advanced Sector
A.E.F., France

Tomato Bisque
Roast Pork Baked Apples
Brussels Sprouts
Mashed Potatoes
Celery
Fruit Salad Mayonnaise
Mince Pie Gruyère Cheese
Apples Grapes Nuts
Coffee

Christmas Dinner Menu, 1943, in a General Hospital
Southwest Pacific Theater of Operations

Fruit Cup
Roast Turkey
Dressing Giblet Gravy
Cranberry Sauce
Mashed Potatoes Candied Sweets
New Green Peas Fresh Asparagus
Garden Green Salad
Fresh Strawberry Ice Cream
Christmas Cookies
Nuts Fresh Fruit Candy
Coffee
Cigars Cigarettes

When DIET-BULK is needed to help counteract constipation...

Nabisco 100% Bran provides a delicious, "crunchy" cereal when constipation is due to insufficient bulk. Patients like its flavor, too, in muffins or cookies, easily prepared from recipes on each package.

But Nabisco 100% Bran is more than palatable diet-bulk. It contains, too, all the nutritive factors of whole bran—valuable phosphorus and iron, important Vitamin B_1.

Finer-milled, bran particles in Nabisco 100% Bran are broken down, made smaller—less likely to be irritating.

Sold in food stores everywhere in pound and half-pound packages, modestly priced, you'll find Nabisco 100% Bran is an inexpensive, adequate bulk-food.

FINER-MILLED
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News Notes

Nutrition Workshop in Havana. The first Nutrition Workshop in Cuba was held in Havana, November 20–December 2, 1944, under the sponsorship of the Coordination Committee for Cuba, according to the program received from Mrs. Myrtle H. Neblett, member of the committee, Manzana De Gomez 415, Havana, Cuba. Mrs. Vera Walker, Bureau of Maternal and Child Hygiene, Florida State Board of Health, Jacksonville, assisted with the workshop. Participants included Mrs. Walker; Dr. José A. Presno Bastiony, Minister of Health; Dr. Guillermo García Lopez, president, Committee of Food and Nutrition, Cuban Medical Association and teacher, Havana University; Gilda Peraza, director, Children's Bureau; Dr. Guillermo Lage, director, Section of Tropical Medicine, Finley Institute; Dr. Enrique Saladrigas, sub-director, and Dr. Domingo Ramos, director, Finlay Institute; Dr. Fernando Milanés, Food and Nutrition Committee and professor, University of Havana; Dr. González Rubiera, professor, Havana University Medical School; Dr. Angel C. Estapé, Ministry of Agriculture; Dr. Angel Vieta, dean, Medical School; Dr. José M. Gutierrez, dean, School of Education; Elena Moure, president, Havana Business and Professional Women's Club; Ana Teresa Curbelo, teacher, Havana Normal School. Among topics discussed were The State of Nutrition in Cuba, Nutritional Deficiency Diseases in Cuba, The Production and Care of Milk, Causes of Malnutrition in Cuba, The Importance of the Schools in the Nutrition Program of Cuba, and The Problem of Feeding Large Groups in Hospitals, Asylums, and Restaurants.

Hospital Corps School for Waves. A report in the *Journal* of the American Medical Association, January 27, states that since its inception the Hospital Corps School for members of the Women's Reserve at the National Naval Medical Center, Bethesda, Maryland, has graduated 5825 women from a 4-week course which includes classes in dietetics. Junior students are instructed by Wave pharmacist's mates, first class, while senior students receive graduate training from the staff of Navy nurses assigned to the school under the direction of Lt. Clara Alice Stolp, Nurse Corps, U.S.N.R.

Medical Bills in Congress. H. R. 758, introduced, by request, by Representative Pace, Georgia, provides for the development of better diets and an improved nutritional status for the people of the United States.

UNRRA. Under Foreign Letters, the *Journal* of the American Medical Association states that in connection with UNRRA's great responsibility with regard to the supply and distribution of food to the devastated regions, in countries in which the condition is serious it is proposed to have at least one nutritionist to investigate, supported by "a team containing a dietitian and a biochemist."

Roster of Women Experts. The State Department announced January 22 that it had received a list of 260 "American women qualified to serve in many fields of specialized activities," as reported by Virginia Pasley in the New York *Daily News*, January 23. The roster was selected by a committee headed by Charl Ormond Williams, as an outgrowth of a suggestion made by Mrs. Roosevelt at a conference in Washington June 14, 1944, attended by representatives of 75 women's organizations, and at which the American Dietetic Association was represented by Nell Clausen (*see* p. 664, this JOURNAL for November 1944). The State Department stated that the roster "is designed as a list which government departments and agencies may consult in the selection of qualified persons to serve on government commissions concerned with the reestablishment of a peaceful world." The list will not be made public.

Committee on Physical Fitness. A booklet entitled *Physically Fit for Production* has been prepared by the Committee on Physical Fitness, National Council on Physical Fitness, to be distributed by the Jacobs Press, Clinton, S. C., at 5 cents each. With an introduction by Federal Security Administrator Paul V. McNutt, the booklet stresses the need for adequate food, exercise, relaxation, and medical care in order to be physically fit for work in industry, with specific illustrations and suggestions. The format is attractive and copiously illustrated with line drawings and photographs.

Hospitals Begin Action on Health Needs of Nation. Present hospital facilities were related to established and future health needs of the country by state hospital association officials in a 2-day midwinter conference of the American Hospital Association, Chicago, February 9–10. The association's 3500 member institutions, the majority of the voluntary hospitals of the country, were to take action on a program based upon a re-evaluation of the purposes of the hospital system.

Food Service Directors Conference. The 1945 meeting, according to an announcement received January 18, will be held in Hartford, Conn. Membership dues of one dollar, to be sent to Winning Pendergast, supervisor of lunchrooms, Board of Education, Detroit 26, entitle the applicant to news letters and notices of meetings of this group.

School Lunch Menus. The monthly publication, *School Nutrition Topics*, prepared by Elizabeth Beyer, midwest director of consumer education, the Borden Company, is now being printed instead of mimeographed and has an attractive new format. The January issue contains several suggested menus for winter lunches, together with quantity recipes, submitted by Eva M. Hurley, director of food service, public schools, Kansas City, Missouri. Copies may be obtained free of charge from the Borden Company, 350 Madison Avenue, New York 17.

Child Food Habits. *Eating Can Be Fun for Little as Well as Big Children* is the title of a new booklet prepared by the Nutrition Service, Visiting Nurse Association, Brooklyn. According to a release from the association, "The booklet was written to meet the demands of many mothers who said it was easy to plan breakfast, and not difficult to prepare the noon meal, but that it was impossible to think of interesting suppers for little children." Edith M. Shapcott, nutrition consultant of the association, is the author, and the booklet is illustrated by Tomi Kuwayama, assistant to Miss Shapcott, and formerly, dietitian, Long Island College Hospital. The booklet gives menus for one week's dinners and suppers suitable for each season of the year. Following the menus are a dozen pages of recipes and ways to prepare vegetables, cheese dishes, eggs, soups, meat, breads, and desserts. In a foreword to mothers, it is pointed out that food is something a healthy child wants and enjoys, and that it is the duty of a parent to set the stage so that a child can enjoy his food. Copies of the booklet are available from Visiting Nurse Association, 138 S. Oxford Street, Brooklyn 17, at 25 cents.

Rheumatic Fever Sound Film. Produced by the Metropolitan Life Insurance Co. under the supervision of Dr. George M. Wheatley, assistant medical director, a 15-minute sound film strip entitled "Jimmy Beats Rheumatic Fever" tells the story of an 8-year-old boy's successful battle with this disease and stresses the importance of following the rules of healthful living and of medical supervision to prevent a recurrence. Produced primarily for parents and others who work with children, the film has been recommended by the New York City Department of Health and Board of Education for inclusion in training courses for nurses and teachers, and for mothers' clubs. Requests for this and other material for a program on rheumatic fever should be addressed to Welfare Division, Metropolitan Life Insurance Co., 1 Madison Avenue, New York 10.

Easter Seal Sale, National Society for Crippled Children. This will be held March 1–April 1. The proceeds are devoted to a program for the care and education of crippled children in the community and in the nation. One important activity now being financed by the sale of Easter seals is a study initiated by the society to gather data regarding the problem of convalescent care, under the direction of a committee headed by Dr. A. L. Van Horn U. S. Children's Bureau. The committee will examine the needs in convalescent care for the crippled in this country; the coordination of hospital treatment and hospital care; the physical effect of long bed rest; the use of activity and recreation during convalescence, and the social effect of institutional residence. The study will encompass the convalescent needs of children suffering from a variety of handicaps, as well as those who are suffering from orthopedic deviations. Special attention will be given to patients suffering from rheumatic fever.

Seventeenth Anniversary Issue of Harolfe Haivri. This issue of the *Hebrew Medical Journal*, edited by Moses Einhorn, M.D., includes among many subjects a timely article on plans for the postwar period in which campaigns against tuberculosis, for lowering infant mortality, and improvement of sanitary conditions in schools are covered. In the section on "Personalia" an article entitled Jews as Nobel Prize Winners in Medicine discusses the work of Ehrlich, Metchnikoff, Barany, Willstaetter, Meyerhof, Landsteiner, Warburg, Loewi, and Erlanger. The editorial office of the publication is 983 Park Avenue, New York 28.

Selected Food and Nutrition Publications. This is a 12-page booklet prepared by the Committee on Evaluation of Printed Materials, New York City Food and Nutrition Program, which lists books and pamphlets for professional leaders and the lay public, news bulletins and digests, bibliographies, and sources of materials. The booklet may be obtained for 25 cents by writing to the

EASY TO HEAT
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New York City Food and Nutrition Program, 45 Lafayette Street, New York 13. Three members of the A. D. A. are listed among those who participated in evaluating the materials listed.

Food and Agricultural Organization. A pamphlet entitled *Want or Well-Being?* which is described as a thought-provoking, up-to-date summary of the purposes and plans of the Food and Agriculture Organization (FAO), is available from Food for Freedom, Inc., 1707 H Street, N.W., Washington 6, at 10 cents a copy, 50 cents per dozen, $2 per hundred. Sixteen nations have joined this permanent agency of the United Nations, pending respective legislative ratification, and the United States has been asked to join.

Restaurant Administration Program. In connection with its Restaurant Administration Program, the National Restaurant Association announces that it is planned to offer two short courses a year at the University of Chicago, the length of the course depending upon the topic under discussion. A definite plan has been worked out so that practically all important phases of restaurant operation will be covered by these courses and a person attending all of them may complete the following subjects in 3½ years: Nutrition and Menu Planning; Food Purchasing and Storeroom Control; Personnel Administration (given February 19–21, 1945); Accounting Procedures and Operating Control; Sanitation and Health and Accident Prevention; Food Preparation; Location, Financing, Layout, Equipment.

Rationing and Price Control. Tighter wartime food rationing which went into effect at the beginning of the year affected the following foods: most cuts of meat, butter, and sugar; canned peas, corn, green and wax beans, asparagus and spinach. At the same time, restrictions on most canned fruits were reduced. Beginning December 31, about 85% of the civilian meat supply was rationed as compared with about 37% previously. OPA explained that civilian supplies of sugar, butter and commercially canned fruits and vegetables were at the lowest point since the war began, and meat supplies were declining. If rationing of canned vegetables had not been resumed, it was estimated that stocks would have disappeared 3 to 5 months before the 1945 pack would have become available.

Canned Vegetable Recipes. The January 15 issue of USDA's *Food and Home Notes* contains several recipes for combining or service of home-canned vegetables, including egg vegetable cutlet, scalloped corn and tomatoes, vegetable curry, and vegetable pie. Combinations include: tomatoes with corn, peas and rice, okra, snap beans, eggplant, cauliflower, or onion; corn with onions and green pepper; potatoes in tomato sauce; snap beans served with tomato or curry sauces, chopped hard-cooked egg, finely chopped onion, drippings from ham or salt pork, onion salt or lemon juice with melted fat, or a little vinegar with sweetened cream or evaporated milk.

Canning Nut Meats. Home economists of USDA have worked out two home canning methods for preserving pecan and walnut meats. Nut meats are first spread in a thin layer in a shallow pan, and heated 30 min. in an oven at 250° F., stirred every 10 min. They are then placed in clean, dry, hot jars, partially sealed, and processed either by the boiling water bath method (30 min.), or in the pressure canner (10 min. at 5 lb. pressure).

Liver. A reminder in the January 22 *Food and Home Notes*, USDA, states that pork or lamb liver is as valuable nutritionally as calf and beef liver; in fact, pork liver often contains 100% more iron than calf liver. For lamb, pork, or mature beef liver that is to be broiled or sautéed, scalding generally improves flavor and makes liver easier to grind or chop. Like all pork, pork liver should be thoroughly cooked. A recipe for Spanish liver, made with alternate layers of a liver mixture and cooked noodles or spaghetti, is included.

Meat Dishes. Included in the Coffee Shop Department of the January *Hotel Monthly* is an interesting article concerning the preparation and service of certain popular entrées produced from cuts and grades of meat which, before rationing, would not have been purchased because of the difficulties involved in their preparation. Practically all braised meats and stews, it is stated, can be served and to some extent prepared in casseroles. Recipes for beef pie Oklahoma, beef and kidney pie, ragout of pork, squab chicken en casserole Villeneuve, lamb kidneys sauté sweet-sour, chicken marmite, and rump steak Nelson, among others, are given and the results portrayed in appetizing fashion. Copies of this issue, at 30 cents each, may be ordered from the publisher, John Willy, Inc., 950 Merchandise Mart, Chicago 54.

"Army Funds Bar Use of Oleo for GI's." According to *PM*, a New York daily newspaper, "The Quartermaster Corps of the U. S. Army gets its $3,000,000,000 slice of army appropriation bill funds for 1945 just so long as it doesn't spend a red cent on oleomargarine." An obscure clause in the bill allots this amount to the Army Quartermaster, provided "that none of the money appropriated in the Act shall be used for the purchase of oleomargarine or butter substitutes for other than cooking purposes, except to supply an expressed preference (for instance if an entire regiment said butter gave it the hives, and they'd sooner have margarine) or for use where climatic or other conditions render the use of butter impracticable."

Small Oranges. According to horticulturists of USDA, quoted in the January 8 *Food and Home Notes*, small oranges are a better buy, both in price and quality, than big oranges. Over a 3-year period oranges taken from packing houses just before shipment and therefore representative of oranges actually going to market have been tested. Tests showed that the juice from the small oranges generally was higher in nutritive quality than that from medium-sized fruit, and still higher than that of the large fruit.

Chile Products. Tests at the New Mexico Agricultural Experiment Station showed that chile products differ widely in vitamin content. Fresh and canned chile peppers offer the most in both vitamins A and C. Dried red chile and sauces made from dried red pepper proved to be rich in vitamin A but lacking in vitamin C. Incidentally, it was reported that on the labels of these products, the spelling *chile* is used generally for the canned green peppers and sometimes for the sauce from fresh red peppers, but that the trade term *chili* is used when the product contains dried peppers.

Use of Electronic Device in Food Preservation. Bactericidal ultraviolet lamps now make it possible to preserve perishable foods safely under highly humid conditions, according to Dr. Arthur W. Ewell, refrigeration research specialist, as announced in a release from the Westinghouse Editorial Service. The device, called a Sterilamp, resembles a slenderized fluorescent lamp and kills bacteria and mold either on food surfaces or in the air. A striking application of the use of the Sterilamp is its role in a patented process for the rapid tenderization of beef: by raising the temperature in the beef aging room, protected by lamps, from 36 to 60° F., the time required for the natural process of ripening is reduced to about one tenth the time previously required. Without a bactericidal agent such as the lamp's ultraviolet rays, the high temperature, combined with the high (85 to 88%) humidity necessary to prevent surface drying and accompanying injury to the meat, would result in surface mold and slime, causing serious shrinkage. In cheese aging rooms where a relative humidity of 80% is desirable to prevent dehydration, temperature can be raised to an average of 45 to 50°F. when the lamps are used, or about 15 degrees higher than in unprotected aging rooms. Thus, the lamps not only permit the acceleration of the cheese-ripening process but also reduce shrinkage. In addition to the bactericidal rays, the lamps produce in the air a small amount (too low to injure foods) of ozone, which is circulated throughout the storage space to hard-to-reach surfaces which elude the ultraviolet rays. At 10 ft. from the 15-watt Sterilamp, direct radiation will destroy in 1 hr. practically 100% of the common bacteria, such as B. coli, and it will destroy 50% in 12 min.

National Council of Nutrition, Union of South Africa. An act, approved May 6, 1940, which established a National Council of Nutrition in the Union of South Africa, quoted in the *First Report on the Activities of the National Nutrition Council*, Department of Public Health, Pretoria, South Africa (price 2s. 6d), reads in part as follows: "There is hereby established a Council, to be known as the National Nutrition Council which shall consist of the Minister of Public Health; the secretaries of the Departments of Public Health, Agriculture, Native Affairs, Labour and Social Welfare; such other officers of the public service as the Governor-General may from time to time determine; and such other persons, having special knowledge of matters relating directly or indirectly to nutrition, as the Governor-General may from time to time appoint. The Minister of Public Health shall be the chairman of the Council. The function of the Council shall be to investigate and report to the Minister of Public Health, upon all matters relating directly or indirectly to the prevention of malnutrition in and the improvement of the diet of the inhabitants of the Union, which in its opinion should be investigated or which the said Minister may refer to it for investigation.

The Council may summon or direct to be summoned any person who in its opinion may be able to give material information concerning the subject of any investigation which is being carried out by it, or who it suspects or believes has in his possession or custody or under his control any book, document or thing which has any bearing upon the subject of the investigation, to appear before it at a time and place specified in the summons, to be interrogated or to produce that book, document or thing. The Council may retain for examination any book, document or thing so produced.

"Any witness who after having been sworn, gives a false answer to any question put to him by the Chairman or any member of the Council, or makes a false statement on any matter, knowing that answer or statement to be false, shall be deemed to be guilty of perjury. Any person convicted of an offence under this section shall be liable to a fine not exceeding £50 or to imprisonment for a period not exceeding six months."

In a study of Bantu school children, conducted during 1938-39 by the National Nutrition Council, the report of which was released in October 1944, the main specific nutritional deficiency

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"No, dear, I'm not a self-made woman," laughed Elsie, the Borden Cow

"BUT, MOMMY, of course you are!" argued little Beulah. "It's your *own* wonderful personality and executive ability that's put you where you are!"

"Oh, no dear," protested Elsie. "I owe my success to the men in my life—lots of them."

"*Men!*" cried Beulah, shocked. "What men?"

"Well," enumerated Elsie, "there are the Borden inspectors and the veterinarians who help the farmer see that all the cows who give milk for Borden's are in the pink of condition *always*. Then, there are all those fine men in the Borden laboratories—"

"How could those men with their funny old test tubes possibly help *you?*" asked Beulah.

"They guard *every single step* in the preparation of the foods that make me famous," explained Elsie. "Foods like Biolac, Dryco, and Beta Lactose for babies. And cheese, ice cream, and all good things that carry the Borden label."

"Maybe those men did help *some*," conceded Beulah, grudgingly, "but I guess you had to be pretty good all by yourself to become the most famous cow in the whole world!"

"Of course, I'm pretty good," laughed Elsie, "I'm a Borden cow, and *if it's Borden's, it's* GOT *to be good!*"

—if it's Borden's, it's got to be good!

signs noted were those related to the vitamin A and B groups. Rickets and endemic goitre were less frequently seen. There was considerable evidence that ariboflavinosis is a prevalent deficiency disease among the Bantu, and that pellagra and pellagra-like diseases are on the increase and already a major nutritional and public health problem in the Union of South Africa.

To quote from the report, "The thin, round-shouldered, flat-chested, pot-bellied child with spindly legs was such a common sight that it can only be concluded that many were on the borders of starvation. The problem is thus not only one of providing this or that particular food factor, but rather a need for a general increase of all foodstuffs which will tend to build up a healthy Bantu population, averting starvation as well as the many more specific deficiency diseases. Diet deficiency diseases, syphilis, malaria, bilharziasis, tuberculosis, scabies and impetigo, preventable crippling, and many other less severe or less common diseases, form no small array of factors which are contrary to the maintenance of good health and nutrition. No amount of juggling can succeed in separating the influence of one as opposed to the others where they so commonly occur together. The outstanding fact is that they are all preventable."

Brazilian Cooperatives. The growth of cooperatives has been so rapid in recent years in Brazil that authoritative estimates quoted by the Office of the Coordinator of Inter-American Affairs place their present number at approximately 1800 and their membership at about 300,000, with the states of Sao Paulo and Rio Grande do Sul taking the leadership in cooperative activity. Brazilian experience has shown that producer-consumer cooperatives are more successful than ordinary consumer cooperatives, and the government is encouraging the formation of the former by credits, legislation and technical aid. Other aids offered include preference in availability certificates for machinery and supplies; preference to cooperative producers of government-supervised crops such as mandioca, maté, and cocoa in the sale of these products; exemption from federal, stamp, income, and property taxes; reduced transportation and legal charges, and ample provision for long-term credits. Conversely, cooperatives are forbidden to speculate in bond buying, buy property for lease to third parties, participate in political or religious controversies, issue preferential dividends, convert themselves to private enterprises, or affiliate with private enterprises.

Latin-American Publications. A tentative directory of university and student publications in the other American republics, compiled by the Pan American Union, Washington, is available at a nominal charge. The directory lists universities by country and publications by subject and school, including a brief description of the general content, size, price, date of founding, name of editor, and address of editorial offices. A table of Latin-American exchange rates is appended. Other publications available from the Union are a list of leading scientific publications of Latin America, list of agricultural periodicals, societies, experiment stations and schools, and an alphabetical list of medical and public health journals.

Inter-American Educational Foundation. New progress in the program to foster closer cultural and educational relations between this country and other American republics was revealed with the signing of agreements between the United States and 11 Latin-American countries. The program, administered in this country by the Inter-American Educational Foundation, an agency of the Office of Inter-American Affairs, will extend over a 3-year period. Complete agreements have been entered into with Bolivia, Costa Rica, Guatemala, Haiti, Honduras, Nicaragua, Panama, and Peru, and partial agreements with Brazil, Chile, and the Dominican Republic. Agreements are being negotiated with Ecuador and Paraguay and preliminary discussions have been undertaken with two other American republics. The program calls for a cooperative exchange of educational information and services. The United States will send such specialists in education to the other American republics as may be requested by Ministers of Education in those republics, while Latin-American educators will come to the United States to place their training and experience at the disposition of school officials here. At the same time, United States scholars will visit Latin-American countries to determine in what manner school programs throughout the hemisphere may be improved by the exchange of ideas. Supplementing this exchange of specialists and scholars will be an exchange of teaching materials and visual education aids, including pamphlets, maps, charts, motion pictures, and exhibits.

Beaumont Memorial Foundation. The establishment of a foundation in memory of Dr. William Beaumont at Prairie du Chien, Wisconsin, where Dr. Beaumont carried on many of his history-making experiments, is announced. It is sponsored by a group of eminent medical men and community-minded Wisconsin citizens. The announcement brochure, available to members of the medical profession, gives an interesting history of Beaumont, the New England boy whose backwoods research and observations laid the groundwork of modern physiological science. It carries many excerpts from Dr. Beaumont's diaries as well as his famous "51 Inferences" which were originally published in 1833 in his classic *Experiments and Observations on the Gastric Juice and the Physiology of Digestion*. Of interest to dietitians is the statement that Prairie du Chien is also the birthplace of Dr. Walter B. Cannon, professor emeritus of physiology, Harvard University, "a worthy successor of Beaumont in the field of physiology."

Diabetic Association. According to *Medical Annals* it is proposed that statistics be gathered preliminary to the formation of a diabetic association, the object of which would be "the education of the diabetic patient, physicians, nurses, dietitians, and others interested in diabetes."

Marion E. Gray Appointed Food Consultant. Miss Gray, member of the A. D. A., and formerly assistant to Mary I. Barber in the War Department, has been appointed Food Consultant, Air Quartermaster Headquarters, Army Air Forces, Washington. Her address is AC/AS, M & S, Air Quartermaster, Room 5E1035, Pentagon Building, Washington 25.

Ruby Motley, Prisoner of War, Released. According to word received from Capt. Katharine E. Manchester, Acting Director of Dietitians, the War Department has announced that Ruby Motley, dietitian, held prisoner by the Japanese following the fall of Bataan, where she was on duty, has been released from Santo Tomas camp in the Philippines.

Frances Cowing Announces Marriage. Miss Cowing, acting director of home economics for Servel Inc., has resigned her position and will marry Capt. Louis A. Schauer, Army Air Forces. A 1939 graduate of the University of Illinois, Miss Cowing has been a member of the Servel staff for the past five years.

John Willy. John Willy, founder, publisher, and editor of *Hotel Monthly*, died December 22, 1944, as the result of a fall in his home. Mr. Willy was born in the town of Ilminster, Somerset, England, February 9, 1859, and upon completion of his schooling and an apprenticeship as journeyman in the dry goods trade, left for America at the age of 20 to seek his fortune in the "new world." After his arrival in 1879 he kept the community in England from which he came informed on the manner of country he had found here when as "Jack o'Somerzet" he wrote a weekly letter for *Pullman's Weekly* (Somerset). In Chicago, he answered a classified advertisement for "a young man to learn journalism" and succeeded in getting this job, his employer being F. Willis Rice, publisher of the *Daily National Hotel Reporter*. After a short time Mr. Willy was named associate editor and held the office for 12 years. In 1892 he resigned this position to establish his own business. In the following August *The Hotel Quarterly* made its appearance as a 16-page saddle-stitched circular, the first 9 pages devoted to a discussion of hotels, and the balance to advertising a wide range of hotel equipment and furnishings. One year later the name of the publication was changed to the *Hotel Monthly*. In the following 50 years Mr. Willy's activities centered in the hotel field, to which he devoted a lifetime of work. At a recent dinner honoring Mr. Willy, Paul Aldrich, president of the Associated Business Papers, said, "John Willy, to those who know him, needs no praise and no eulogy. His works speak for him more eloquently than words."

Mary Swartz Rose Memorial Lecture. This annual lecture, sponsored by the Greater New York Dietetic Association, was presented February 14 at the New York Academy of Medicine by Dr. Edward J. Stieglitz, Washington, D. C., well known author and prominent consultant in the field of geriatrics, who discussed What is Aging?

News of Canadian Dietitians. The Canadian Home Economics Association *Newsletter* reports that in the "New Year's Honours List" Lt. (Dietitian) Ellen Elizabeth Stanley Wright, A.R.R.C. Royal Canadian Army Medical Corps, was made an associate of the Royal Red Cross. Lt. Wright holds a B.S. in household economics and has had one year's experience at St. Luke's Hospital, New York.

Lt. Comdr. Doris Taylor, W.R.C.N.S., Ottawa, has been appointed emergency feeding specialist, UNRRA. Commander Taylor is the first W.R.C.N.S. officer to be so appointed. As far as is known, she will be stationed in the Balkans.

Naval tradition was shattered in October 1943 when Wren dietitians were first appointed to superintend Royal Canadian Navy menus aboard ship and in shore stations. Now there are nineteen dietitians. Qualification standards include a university degree; eligibility for membership in the Canadian Dietetic Association; and 3 or 4 years' experience in commercial work. Pay ranges from $4 a day for a sub-lieutenant to $5.20 for lieutenant. The Wren dietitians posted to establishments are given full command as far as meals, menus, orders, supplies, galley, mess, and even dishwashing are concerned, subject to Naval Orders on food.

Since February 1942, 128 dietitians have been commissioned in the R.C.A.F. Wg/O Kathleen Jeffs, formerly head dietitian for the T. Eaton Company, Montreal, now on loan to the R.C.A.F. for the duration, holds the highest rank. There are 6 squadron

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officers, 23 flight officers, and the remainder are section officers. Twenty-four are overseas "doing the tremendous job of keeping the R.C.A.F. happy on rations available." Recently the first of several mobile dairies for the reconstruction of powdered milk arrived overseas. The milk is reconstituted, chilled and aged, and the finished product, if served cold, is hardly distinguishable from fresh milk. One machine in England is producing 280 gallons daily at an R.C.A.F. station. Sq/O Helen Buik (University of Toronto) is in charge of messing overseas. S/O M. G. Stephens, S/O L. Bridges (University of Columbia) and S/O L. McKergow (McGill University) have served in Labrador.

The R.C.A.F.'s largest station is in Newfoundland, and has five messes. Providing food for constant traffic here means preparing for tremendous numbers of ground crew, as well as for transient air crew. The crew of a Liberator may breakfast there, yet have had their previous meal in the Azores. In addition to regular meals, the two dietitians stationed there are responsible for meals for all parties, crash crews, men at outposts, guards, and telephone maintenance men, who work all hours of the day and night. Fl/O Brittain (McGill University) took a perilous trip on the West Coast to visit one of these tiny groups of men on an isolated island in the Pacific. "Traveling by air, large boat, small boat, waiting for tides and fogs, and then into the Pacific riding the breakers, she arrived—the first of the Women's Division to set foot on the island."

Rates of pay for the Women's Division, R.C.A.F. are 80% of those of men, and range from $3.40 per day for an Assistant Section Officer, to $8 per day for a Wing Officer.

Nutrition Services, established at Ottawa in 1941, has been reorganized, and is now called Nutrition Division, under the Dominion Department of Health. Dr. L. B. Pett remains as director, and Dr. F. W. Hanley has been appointed to the research section, where Mary McBeth, B.S., is senior research nutritionist. The chief nutritionist under Dr. Pett is Grace Duggan, B.S., formerly on the staff at the University of Alberta, where she conducted a radio program over the University station. Miss Duggan will direct the information section, and the work of the five regional representatives.

Activities of State Associations, 1944. At the annual dinner in Chicago for presidents of state associations affiliated with the A. D. A., the following activities, among others previously reported in this JOURNAL, were noted: Several states had been working on membership campaigns, and many reported favorably on the new provision in the Constitution which automatically makes national members also members of the state organization. Most of the state associations are represented on state nutrition committees. During the year, the Rhode Island Dietetic Association was successful in defeating legislation which would permit naturopaths to practice diet therapy in that state; they also cooperated with OPA in sponsoring OPA education day. The Minnesota association sponsors a refresher course each year. The Texas association, now divided into northern (Dallas), southern (Houston), and central (Austin) sections, has been working diligently toward increased membership. The Maryland association, including the District of Columbia, was invited by the Medical and Chirurgical Faculty to their annual meeting and was asked to present an exhibit. Foods used in special diets were demonstrated. Pamphlets on nutrition, suitable for parents, have also been distributed through day care centers. The association assists in the civil service examinations for positions in the city of Baltimore.

Arkansas, a newly formed association, reported that the dietitians attached to an Army hospital within the state had been of great help in organizing the state association. Among the many activities reported for the New Jersey Dietetic Association was the compilation of a bibliography on tropical diseases, while Oklahoma dietitians had compiled safety measures and rules for distribution. Ohio has an editor, business manager, and statewide editorial board for the state bulletin. The lunchroom manual compiled by this association has proved to be a source of income during the year. Pictures of dietitians at work in various capacities will be shown throughout the state for the purpose of recruiting new dietitians.

Dallas Dietetic Association. Officers for 1945 are: president, Frances Welch, North Texas State Teachers College; vice-president, Florence Langford, Texas State College for Women; secretary, Emmely Von Goertz, Parkland Hospital; and treasurer, Bama Richburg, Mary Ann's Pantry. Speakers at recent meetings included Dr. J. M. Hill, Baylor University Hospital, who discussed the use of blood plasma and method of preparation at the Baylor Blood Bank, and Telbert D. Jessup, Dallas Red Cross, who spoke on food programs in liberated countries and food parcels for prisoners of war.

Miss Von Goertz announces a prenatal clinic as the latest project of her staff at Parkland Hospital.

Marthela Wisdon, assistant dietitian, Parkland Hospital, has announced her marriage to Mr. Robert Huey, Dallas.

Mr. and Mrs. Warren O. Clark (Mary Bowling Clark, chief dietitian, Southern Methodist University) announce the birth of a son, George Henry Clark.

Mildred Bonnell and Grace I. Neely, formerly with WFA, have been appointed to the UNRRA. Miss Neely has already gone overseas and Miss Bonnell is taking an orientation course at the University of Maryland before going to Italy.

Other recent appointments include: Julia Hunter, to Lone Star Gas Company, Dallas, succeeding Albertine Berry, now director, Mrs. Tucker's Homemakers' Department, Sherman; Sallie Babbit and Margaret Clough, to Southern Methodist University as assistant dietitians; Mrs. Mary McMahan, to Scottish Rite Dormitory, succeeding Julia Claire Wood, now at John Sealy Hospital, Galveston; Lucille Looney, Billie Gightower, Mary Jeflin, Billie Wilson and Lorraine Little, to Dallas School Lunchroom System, succeeding Frances Welch and Nina Tynes, now at North Texas State Teachers College, Denton; Doris Dowdell, Annelu Moore, and Mary Schiebel, to Parkland Hospital; Minnie Sprain, to Medical Arts Hospital as assistant dietitian; Christine Berrier, Texas Technological College, Lubbock, to Hockaday School, Dallas; and Mrs. Elizabeth Montgomery, to Duton's Lockheed Cafeteria, as assistant manager.

Kansas Dietetic Association. At the November meeting held in Topeka, with Mrs. Bessie Brooks West as the principal speaker, Mrs. Ruth Dillon Heckler, Wyandotte High School, Kansas City, was installed as 1944–45 president. Other officers are: president-elect, Dr. Martha Pittman, Kansas State College; vice-president, E. Pauline Richardson, Stormont Hospital, Topeka; treasurer, Frieda Antener, Independence. Sister Regina Marie, Marymount College, Salina, is chairman of the Community Nutrition Committee. The following committee has been appointed to submit dietetic questions to be used for the State Board Examinations for Nurses: Mrs. Alice Halter, Bethany Hospital, Kansas City, chairman; Dillia Steiner, Wesley Hospital, Wichita; and Ruth Gordon, University of Kansas Hospitals, Kansas City. A Publicity Committee has also been appointed.

Dorothy Fizzell, recent graduate of the student dietitian training course, Colorado General Hospital, Denver, is now on the staff of Bethany Hospital, Kansas City.

Maryland Dietetic Association. At the request of station WFBR, that a dietitian prominent in nutrition work on the home front appear on the station's program January 2, Mrs. Alice Lambert of the Red Cross Nutrition Service, Baltimore, was selected to discuss the Dietitian's Aide and Canteen Courses in the city. Over 8000 Baltimore women have participated in this work.

Twelve members now serving overseas as dietitians in the armed forces received Christmas boxes from the association.

Emma Jane Murphy, Philadelphia General Hospital, has been appointed staff dietitian at Baltimore City Hospitals, and Mrs. Gertrude Harrison, at South Baltimore General Hospital.

Michigan Dietetic Association. Lt. Kathryn Seelye, Coldwater, is the first dietitian returned from overseas duty as a patient in the Percy Jones General Hospital, Battle Creek. Lieutenant Seelye was stationed "Somewhere in New Guinea" and returned in December.

Recent radio talks on nutrition were presented by Elmira Blecha, clinic dietitian, and Mary Jean Zentner, student dietitian, University Hospitals, Ann Arbor.

The following marriages have been announced: Marjorie Williams, Saginaw General Hospital, to Mr. Frank E. Towsley, Boston; Marguerite Voorheis, St. Mary's Hospital, Saginaw, to Mr. Albert Drury; June Larrick, Eastman Kodak Company, Rochester, N. Y., to Mr. Dale Swan; Margaret Steele, St. Mary's Hospital, Detroit, to Mr. Robert Foerch; Emily Jo Schwartz, Clark County Memorial Hospital, Jeffersonville, Ky., to Mr. Reuben Allen Craig; Jean Svendsen, to Mr. Robert Denwood.

Recent appointments include: Elizabeth Hutchins, graduate, student dietitian training course, St. Mary's Hospital, Rochester, Minn., to Bronson Hospital, Kalamazoo; Mae Burton, Michigan State College, to Community Hospital, Battle Creek; Lorayne Charlevoix and Charlotte Krippens, Michigan State College, to Leila Hospital, Battle Creek, as head dietitian and assistant dietitian, respectively; Jeanne Fulkerson, Barbara Lofquist, Eleanor Dykhouse, and Christine Wanhainen to University Hospitals; Ruth Lutz, to Cambridge Hospital, Cambridge, Mass.; Charlotte Richardson, to Abbington Hospital, Philadelphia; Jeannette Botsford, to Barnes Hospital, St. Louis; Geraldine Bryant, to St. Joseph's Hospital, Joliet, Ill.; Barbara Graves, to Samaritan Hospital, Troy, N. Y.; Pauline Hart and Marguerite Lipscomb, to Illinois Research and Educational Hospital, Chicago; Rose Karchefsky, to Jewish Hospital, Brooklyn; Ruth Kooher, to Strong Memorial Hospital, Rochester, N. Y.; and Veronica Koss, to University Hospital, Cleveland.

Students of the dietitian training course at Harper Hospital for 1944–45 are: Ouida Fayhe Gray, Texas State College for Women; Julia Jane Baldauf, Seton Hill College; Mary Margaret Budd and Virginia Leota Smith, Iowa State College; Beverly and Jacqueline

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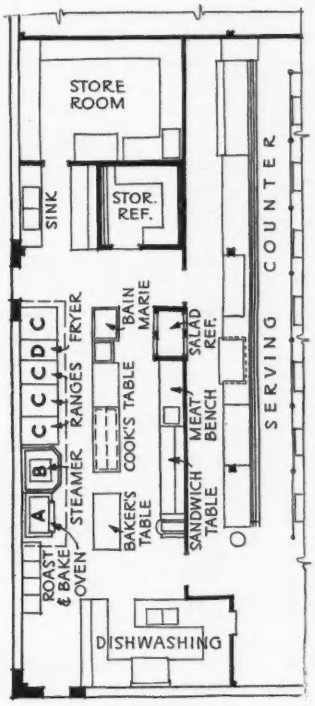

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Dew, Florida State College for Women; Marian Virginia Dore, University of Washington; Muriel Lois Ferrell, Michigan State College; Helen Ruth Gale, University of Idaho; Ann Helen Laica, Marygrove College; Dorothy Eleanor Lyden and Marjorie June Macy, University of Missouri; Mary Lucille McMillian, University of Alabama; Willa Ann Rousey, University of Wisconsin; Mary Jane Rankin, Park College; and Audrey Louise Smola, Montana State College.

Dena Cederquist has joined the staff of the Foods and Nutrition Department, Michigan State College, as research assistant in nutrition. Miss Cederquist has the B.S. and M.S. degrees from Iowa State College and has studied at the University of Wisconsin under Dr. Steenbock for the past three years.

The Foods and Nutrition Department, Michigan State College, will have several assistantships for graduate study open for the school year 1945–46. Applications should be made to the Dean of the Graduate School or to the Head of the Department.

Staff changes and appointments at Henry Ford Hospital, Detroit, include: Marjorie Sheppard, now living in Pensacola, Florida, where her husband, Lt. Commander Sheppard, is stationed; Helene Ebling, clinic dietitian, now employed in Oakland, Calif.; Claire Means Little, formerly of University Hospitals, Cleveland, now at Henry Ford Hospital; also Marjorie Haskins and Martha Linde who complete their internship March 1. Lt. Louise Frolich has arrived safely in England.

New Jersey Dietetic Association. The program of the January meeting at Orange Memorial Hospital included the following: Dr. Robert R. Williams, Food and Nutrition Board, N.R.C., whose subject was Mass Reform in Nutrition; and Mr. Garwood Ottinger, Bell Telephone Company, who spoke on Human Side of Long Distance in Wartime.

Recent appointments include: Kathleen Stowell, graduate of Beth Israel Hospital training course, to Paterson General Hospital; Barbara Sievering and Esther Berges, to Orange Memorial Hospital; Mildred Freidman and Mrs. Charles Hegtvedt, to Beth Israel Hospital, Newark. Registered in the above training course are: Sonya Fast, University of Wisconsin; Margaret Zettle, Iowa State College; Bette VanCleve, University of Nebraska; Florence Adelson, Simmons College; Carol Goldstein, Pratt Institute; and Lillian Wein, Pennsylvania State College.

Greater New York Dietetic Association. A joint meeting with the Greater New York Hospital Association was held January 10, Lenox Hill Hospital Auditorium, at which F. Alexander Magoun, professor of human relations, Massachusetts Institute of Technology, spoke on Psychological Approach to Leadership.

North Carolina Dietetic Association. At the January meeting of the Executive Board, association projects for the year were discussed and plans made for the twelfth annual meeting to be held in the fall at the University of North Carolina.

Marylila Bibb, formerly on the staff of a shipyard cafeteria, Jacksonville, Fla., has been appointed ward dietitian, Charlotte Memorial Hospital.

Ohio Dietetic Association. The Executive Committee, Ohio Dietetic Association, met in Columbus, January 27. Members present were: Bertha Biltz, St. Luke's Hospital, Cleveland, president; Florence Seidel, Kroger Food Foundation, president-elect; Mrs. Lucille Teeple Smith, Canton, secretary; Florence Levy, Mt. Sinai Hospital, Cleveland, chairman, Administration Section; Henriette Pribnow, Miami Valley Hospital, chairman, Diet Therapy Section; Mrs. Marjorie Hall Siler, Cincinnati, chairman, Professional Education Section; Jane Diehm, Cleveland Public Health Association, chairman, Community Nutrition Section; Lillian Rees, Norwood School Lunchrooms, treasurer; Martha Chase, University Hospital, Columbus, member, State Nutrition Committee; Mary Benham, Columbus, legislative chairman; Mrs. Martha Nelson Lewis, University Hospital, Columbus, historian; Marie Hines, University Hospitals, Cleveland, member, House of Delegates; Minerva Harbage, White Cross Hospital, Columbus, chairman, Nominating Committee; Martha Moffett, Good Samaritan Hospital, Cincinnati, business manager, state bulletin; and Dorotha Symons, Christ Hospital, Cincinnati, publicity chairman, and editor, state bulletin. Reports were sent to the meeting by Magdalin Klobe, St. Luke's Hospital, Cleveland, chairman of student activities; and Gladys Mason, Huron Road Hospital, chairman, Constitution Committee.

Dr. Margaret Mead, executive secretary, Committee on Food Habits, National Research Council, spoke before the Columbus Dietetic Association January 31 on Fitting Science and Living Together.

Members of the Columbus Dietetic Association gave a baking demonstration at the Central Ohio Restaurant Association meeting held in that city recently.

Hulda Ungerecht, Ohio Gas and Fuel Company, Columbus, became president of the Columbus Dietetic Association when Julia McDermid resigned because of illness in the family.

Recent appointments include: Helen Shaw, now food clinic and teaching dietitian, University Hospital, Columbus; Sister Mary Anthony, formerly dietitian, Mercy Hospital, Canton, now at Charity Hospital, Cleveland; Sister Rosario, now at Mercy Hospital; Mrs. Jane Stover, now assistant dietitian at Holmes Hospital, replacing Pauline Brady, now an Army dietitian.

Lt. Hannah Elizabeth Knapp, stationed in Italy with a general hospital, has announced her engagement to Mr. Robert H. Jones III, recently discharged from the Army.

St. Louis Dietetic Association. At the January meeting, Carol Morgan Hensel was appointed treasurer to succeed Lorraine Knese, and Mrs. Eugenia Shrader was appointed to serve in an advisory capacity to newspapers and radio stations. After the business meeting Dr. Sherman's book, *The Science of Nutrition*, was reviewed by Mrs. Shrader.

Mrs. Vesta Odell, president of the Missouri Dietetic Association, has announced that the annual meeting of the state association will be held in April at Columbia, in conjunction with the Missouri Home Economics Association meeting.

South Carolina Dietetic Association. The following officers were elected at the annual state meeting in November: president, Elizabeth Burriss, University of South Carolina Cafeteria; president-elect, Gladys Stoddard; secretary, Mildred C. Meyer; treasurer, Myrtle Heath. The program included an address by Anna M. Tracy, Florida State College for Women, on Home Economics Today and Tomorrow; and a round-table discussion on Nutrition in Public Schools.

The Alabama, Mississippi, and South Carolina corn enrichment laws became effective February 1. All three statutes apply to degerminated corn meal and pearl grits, but do not apply to the whole grain products made in the small southern corn mills. The cost of enough enriching ingredients in granular form, f.o.b. shipping point, to enrich 100 lb. grits is 8 cents, the f.o.b. cost of ingredients in powdered form for enriching 100 lb. degermed meal is 4 cents, according to *The Palmetto Leaf*, the state association's bulletin. There are no shortages of ingredients, as most of the vitamin allocation restrictions have been removed.

News From Advertisers and Exhibitors. Pfaelzer Brothers, Chicago 9, announce the return of James Kowen, who received an honorable medical discharge from the Merchant Marine, to his post as representative of the company in New York State. Mr. Kowen spent two years on troop and freight ships delivering troops and vital war materials to the battle fronts. At a 4-day conference of sales representatives of the company, conditions in the meat industry and the outlook for the next few months were considered and solutions sought for the many problems confronting all purveyors of meals.

The Corning Glass Works, Corning, N. Y., has issued a catalogue of Pyrex products, including those temporarily discontinued. Accompanying the catalogue is a request by Lucy M. Maltby, Home Economics Department, for suggestions and ideas concerning glass dishes which should be made when the war is over.

Cellu Topics for November 1944, distributed by the Chicago Dietetic Supply House, 1750 West Van Buren Street, Chicago 12, tells an interesting story of the origin of Cellu Products. During World War I and immediately following it, there was an increased interest in foods and nutrition. The function of foods in both normal and abnormal diets was the object of much research. Dietetics was a growing profession and became a new word in the vocabulary of both professionally minded individuals and laymen. The dietitian was recognized as an essential person on the hospital staff because of her need to supervise the preparation of foods for the many types of special dietaries which were being prescribed. It was during this period that the Chicago Dietetic Supply House was organized in 1921 by a hospital dietitian (a member of the A. D. A.) who believed that there should be some one establishment where people could buy reliable supplies and also have professional guidance in the preparation of diets. Today, dietitians with hospital experience are employed to supervise the manufacture of Cellu foods, create new products, and to instruct thousands of individuals in food preparation and dietary management.

A liberal collection of large and small-quantity recipes incorporating the use of B-V, a highly concentrated combination of rich meat juices and selected vegetable flavors, produced by Wilson & Company, Chicago 9, may be obtained upon application. Included are recipes for bread dressings, gravies, meat and vegetable stews, Spanish rice, and barbecued spare ribs.

Marie Gifford's (Esther Latzke, A. D. A. member) Kitchen Service of Armour and Company, Chicago, in Bulletin No. 79 stresses the need for a good breakfast. Enticing breakfast dishes and refreshingly new combinations are listed, such as creamed dried beef shortcakes and sliced ham with poached pear.